



Fenestra

BLUE BOOK OF
STEEL WINDOWS

INDEX

ARCHITECTURAL

Architectural Service	3	Fenmark Projected Windows .. (Specifications)	5
Basement Windows	57	Types and Sizes	(G-102) 19
Casement Doors	(B-301) 42	Combination Details	(G-103) 20
Draping and Awning		In Brick	(G-104) 21
Suggestions	(A-510) 38	In Stone	(G-105) 22
Fencraft Casements	(Specifications) 25	In Terra Cotta	(G-106) 23
Open In	(Specifications) 26	Fenwrought Screened Case-	
Open In	(A-303) 40	ments	(Specifications) 43
Screened	(Specifications) 27	Fenwrought Casements	(Specifications) 44
Hardware	(A-407, A-408, A-409) 28, 29, 30	Hardware	(A-211, A-212) 45, 46
Full-Sized Details	(A-501) 31	Full-Sized Details	(A-202) 47
Types and Sizes	(A-515) 32	Types and Sizes	(A-203, A-204) 48, 49
Glazing Details	(A-516) 33	Leading Details	(A-210) 50
General Details	(A-516) 33	General Details	(A-210) 50
In Brick Veneer	(A-505) 34	In Brick and Stone	(A-207) 51
In Brick	(A-506) 35	In Stucco, Tile and	
In Stone	(A-507) 36	Frame	(A-208) 52
In Wood	(A-508) 37	In Half Timber and	
Fenmark Windows	(Specifications) 4	Frame	(A-102) 53
Screened	(Specifications) 5, 6	In Brick	(A-103) 54
Hardware	(G-415, G-416, G-417) 7, 8, 9	Fenestra Chamberlin	
Full-Sized Sections	(G-405, G-406) 10, 11	Screens	(A-104) 55
Types and Sizes	(G-408) 12	Projected-In Sill	
Combination Details	(G-409) 13	Ventilators	(A-107) 56
In Stone	(G-411) 14	Hospital Windows	(G-501) 18
In Terra Cotta	(G-412) 15	Hospital Operating Room	
In Metal Frame	(G-413) 16	Windows	(A-304) 41
In Concrete	(G-414) 17	Metal Stool Suggestions	(G-108) 24
		Subframe Suggestions	(A-410) 39
		Underwriters' Specifications	58
		Utility Windows	57

INDUSTRIAL

Airplane Hangar Doors	(Specifications) 77	Pier	85
Types and Sizes	(Y-122) 78	Pier, Details	(Y-601-1) 87
Byrne Hangar Doors	79	Swing and Slide	84
General Details	(Y-620-1) 80	Vertical Lift	85
Warehouse Doors	(Y-621-1) 81	Vertical Lift, Details	(Y-602-6) 88
Commercial Steel Doors	(Specifications) 82	Operating Devices	73, 74, 75
Swing and Slide	(Y-505) 83	Pivoted Windows	(Specifications) 59
Continuous Windows	(Specifications) 70	Hardware	60
Bottom Hung	70	Types and Sizes	(L-102) 61
Fixed	70	Combinations	(L-103) 62
Top Hung, Cross Sections	(P-102) 71	Installation Details	(L-104, L-105) 63, 64
Storm and End Panels	(P-104) 72	Horizontal Mullions	(L-107) 65
Detention Windows	76	Camber and Semi-	
Industrial Doors	84, 85	Circular Heads	(L-109) 66
Accordion	85	Projected Windows,	
Accordion, Details	(Y-301) 86	Commercial	(Specifications) 67
Bi-fold	84	Projected Windows,	
Bi-fold (Jack Knife)		Architectural	(Specifications) 68
Details	(Y-604-21) 89	Types and Sizes	(G-205) 68
Garage	85	Installation Details	(G-206) 69



Fenestra

WINDOWS OF STEEL

DETROIT STEEL PRODUCTS COMPANY

Factories: Detroit, Michigan, Cleveland, Ohio and Oakland, California
General Offices: 2250 East Grand Boulevard, Detroit, Michigan
Local Offices in 217 Cities

(Member Solid Section Steel Window Industry)

FENESTRA ARCHITECTURAL SERVICE

TO ASSIST the architect in visualizing Fenestra Windows as they actually will appear in the building he is designing, Detroit Steel Products Company maintains an Architectural Service Department with architects trained in the correct use of Fenestra in monumental structures.

Without charge or obligation to you, this department will be glad to work up drawings showing exactly how Fenestra Windows may be detailed into the type of construction you are using and made to harmonize with your own architectural design.

It has been our privilege to work with some of the largest architects in the country with very gratifying results. Sometimes we are able to indicate a saving through the use of standard types. Almost always there are

problems of appearance, arrangement of ventilators, amount of light or ventilation, on which our knowledge of steel window application to architectural requirements is helpful.

The men in the Architectural Service Department all know how to use a pencil. They talk an architect's own language. They are not salesmen. Their service is available for the asking. A word to your local Fenestra representative or to the Home Office at Detroit will enlist their immediate co-operation.

FENESTRA "FENMARK" WINDOWS

SPECIFICATIONS

1 GENERAL

- 1a ALL windows shall be Fenestra "Fenmark" as manufactured by Detroit Steel Products Company.

2 MATERIAL AND CONSTRUCTION

- 2a FRAME sections shall have a minimum depth of 1½" from front to back and shall be designed with equal or unequal legs as specified. Frame and ventilator sections shall be of hot rolled, solid steel, providing continuous, two-point, flat weathering contact between ventilators and frames.
- 2b ALL sections shall be re-rolled cold to make them true and straight and shall be individually electrically tested, for straightness.
- 2c FRAMES shall be mortise and tenon, air hammer riveted and electrically welded at all corners. Swing leaves shall be mitered at all corners and electrically welded. All welds shall be ground to a smooth finish.

(Mullions or transom bars are provided between adjacent units where specified.)

(Heavy, electro-galvanized steel head drip is supplied above all swing leaves.)

(Sill and jamb anchor clips with bolts for attachment to frame are supplied where required.)

3 ATTACHED HARDWARE

- 3a ALL side hung swing leaves shall open out on two heavy friction hinges of solid rolled, sherardized steel with heavy re-entrant angle fillets. Each hinge shall be equipped with two friction washers. Washers and hinge members shall be held by lock washers and bronze studs with acorn nuts, so that friction may be increased or decreased by adjusting the nut.
- 3b PROJECTING open-in ventilators shall be supported by two heavy, spring steel arms on steel brackets, double riveted to the vertical members. Each ventilator shall be hung on two brass, sliding U-shaped shoes riding inside the jamb sections, tension being retained by two coil springs completely enclosed in brass housings. Ventilators to tilt in at the top while sliding up from the bottom.

(In projecting open-out ventilators, the action is reversed.)

- 3c AN ornamental locking handle bracket of solid rolled steel, shall be electrically welded to the stile of each open-out swing leaf.
- 3d BRASS strikes and wrought steel keepers shall be supplied attached to the window frame as required.

4 DETACHED HARDWARE

- 4a ALL locking handles shall be U. S. Government specification solid bronze, of ornamental design and coinage finish, obtained without the use of plating or chemicals and equipped with friction springs, (or) same equipped with friction clevises.

(Swing leaf handles 1119 or 699. Sill ventilator handles 1122 or 1071. Special hardware at extra cost.)

- 4b SWING leaf operating hardware shall consist of a finger pull solidly attached to the sill of each swing leaf (used with friction hinges when specified) (or) solid bronze thumb screw operator (with non-friction hinges).

(Finger pull 1130 or 1230. Thumb screw operator 1101 or 203.)

- 4c PROJECTED open-out ventilator hardware shall consist of a solid bronze pole ring at the head of the ventilator and a solid bronze locking handle equipped for pole operation at the sill.

(Pole ring 151. Handle 1214 or 914.)

- 4d PROVIDE solid bronze handle for all projecting open-out transoms and a solid bronze automatic spring catch for all projecting open-in transoms.

(Transom handles 733 or 914. Spring catch 739.)

5 PAINTING

- 5a ALL windows shall be given one dip coat of gray lead and oil paint at the factory.

(Provide for an additional coat of paint by the painting contractor after erection of windows and before glazing. Final painting should be deferred until three weeks after glazing to permit putty to set. Where desired, Fenestra Construction Co. will do field painting under a separate contract.)

6 ERECTION

- 6a THE window manufacturer shall erect all windows, caulk with mastic and form a weather-tight union between window frames and mullions or transom bars. Caulking, at head or jambs, where windows about the building construction, shall be supplied and applied by others, after erection. Sill caulking to be supplied by window manufacturer.

(Include in the masonry specifications that all masonry openings shall be constructed in accordance with Fenestra installation details so that the windows may be installed after masonry is completed. Also include in the masonry specifications that all mortar grouting, pointing, etc., shall be done by the mason contractor after the windows have been erected.)

7 GLASS AND GLAZING

- 7a ALL glass shall be bed puttied and face puttied, and further secured by copper-plated spring glazing clips supplied by the window manufacturer.

(Putty should be a high grade, quick-setting steel window putty. Ordinary wood window putty cannot be used. Glass should be ⅝" or ¾" plate. Single or double strength glass is not recommended. Glass and glazing labor supplied by Fenestra Construction Co. if desired, under a separate contract.)

8 SHADING

(All shades must be located at least 2½" from the inside face of the window to clear hardware. Each "Fenmark" window is drilled at both jambs near the head for the attachment of standard shade brackets.)

9 METAL STOOLS, SUBFRAMES

(Metal stools and rolled steel or pressed metal subframes can be supplied if specified. Consult nearest Fenestra office.)

PROJECTED "FENMARK" WINDOWS

SPECIFICATIONS

1 GENERAL

- 1a ALL windows shall be Fenestra Projected "Fenmark" as manufactured by Detroit Steel Products Company.

2 MATERIAL AND CONSTRUCTION

(Same as "Fenmark" windows 2a, 2b, 2c, except that head drip is unnecessary and, therefore, not supplied.)

3 ATTACHED HARDWARE

- 3a ALL ventilators shall be designed to slide down from the top while swinging out from the bottom (or) tilt in from the top while sliding up from the bottom. Each ventilator shall be supported by two heavy, spring steel arms, on steel brackets, double riveted to the vertical members, and shall be hung on two brass, U-shaped shoes, sliding in the jamb sections. Tension shall be retained by two coil springs, completely enclosed in brass housings.

- 3b VENTILATORS where specified shall be so designed and arranged that all glass may be washed on the outside from within the building.

(Handle brackets, strikes and keepers are the same as in "Fenmark" windows.)

- 3c EACH open-out ventilator shall be equipped with two shouldered, alignment-control, bronze springs, riveted to the channel jambs.

(The shoulders of these springs are so designed and located as to limit the downward travel of the friction shoes and stop all open ventilators in uniform alignment of approximately 45 de-

grees. When it is desired to open the ventilator to a greater angle for washing, light pressure on the springs permits the friction shoes to slide past. As the ventilator returns to a closed position, the action of the springs is automatic.)

4 DETACHED HARDWARE

- 4a ALL locking handles shall be U. S. Government specification solid bronze, of ornamental design and coinage finish, obtained without the use of plating or chemicals, and shall be equipped with friction devices.

(Open-out ventilator handles 733 or 914.)

(Open-in ventilator handle 1071.)

- 4b VENTILATORS out of reach from the floor shall be equipped with solid bronze pole rings or spring catches except where mechanical operator is specified.

(Pole ring 151. Spring catch No. 739.)

5 PAINTING, ERECTION

(Same as "Fenmark" windows 5 and 6.)

6 GLASS, GLAZING, SHADING

(Same as "Fenmark" windows 7 and 8.)

7 SCREENS

(Screens can be supplied where specified. Consult the nearest Fenestra office.)

8 METAL STOOLS, SUBFRAMES

(Metal stools and rolled steel or pressed metal subframes can be supplied where specified. Consult the nearest Fenestra office.)

SCREENED "FENMARK" WINDOWS

SPECIFICATIONS

1 GENERAL

- 1a ALL windows shall be Fenestra Screened "Fenmark" as manufactured by the Detroit Steel Products Company.

2 MATERIAL AND CONSTRUCTION

(Same as "Fenmark" windows—2a, 2b, 2c.)

3 ATTACHED HARDWARE

- 3a ALL side hung swing leaves shall open out on two heavy (cleaning) hinges of solid rolled, sherardized steel with heavy re-entrant angle fillets. Hinge pins shall be solid bronze accurately fitted into flanged bronzed bushings.

- 3b PROJECTING open-in ventilators shall be supported by two heavy, spring steel arms, on steel brackets, double riveted to the vertical members. Each ventilator shall be hung on two brass, U-shaped shoes, riding inside the jamb sections, tension being retained by two coil springs completely enclosed in brass housings. Ventilators to tilt in at the top while sliding up from the bottom.

(In projecting open-out ventilators, the action is reversed.)

- 3c BRASS strikes and wrought steel keepers shall be supplied attached to the window frame as required. Provision for screen attachment and operator attachment shall be included.

4 DETACHED HARDWARE

4a LOCKING handles and handle brackets together with all operators shall be so designed that each swing leaf may be opened, closed and locked through the screen but without touching it. Locking handle bracket shall be ornamental in design, accommodating and entirely concealing the locking cam.

4b LOCKING handles shall be U. S. Government specification solid bronze, of ornamental design and coinage finish, obtained without the use of plating or chemicals and equipped with concealed coil springs (or) solid bronze with oxidized finish.

(Swing leaf handle 1222 or 1023. Sill ventilator handle 1122 or 1223.)

4c EACH swing leaf operator shall consist of a bronze arm, bronze locking lever and bronze or alloy housing so designed as to operate through the screen but without touching it and open or close the swing leaf or hold it in any desired position.

(Swing leaf operator 1216 or 1133.)

4d PROVIDE solid bronze adjuster for all projecting open-out transoms, and a solid bronze automatic spring catch for all projecting open-in transoms.

(Open-out adjuster 1108. Spring catch No. 739.)

5 PAINTING, ERECTION

(Same as "Fenmark" windows 5 and 6.)

6 GLASS, GLAZING, SHADING

(Same as "Fenmark" windows 7 and 8.)

7 SCREENS

7a SCREENS for swing leaves and projected open-out transoms shall set flat against the inside of the frame, with handles and adjusters extending through the screens, so that each window may be opened, closed and locked through the screen but without touching it.

7b SCREENS for projected open-in ventilators shall set flat against a screen guide outside the frame and shall be equipped with fasteners so designed that the screens may be readily hung or removed from inside the building.

7c SCREEN frames shall be cold-rolled, rust-proof steel (or bronze) containing a reinforcing brace running the full length of the stile. Steel frames shall be painted two coats of grey lead and oil, baked on. Screen cloth shall be 16-mesh bronze wire. Each screen shall be provided with a 22-gauge steel (or bronze) escutcheon with circular hole to fit over and around the locking handle.

(Bronze frames or steel frames with bronze cap, or screens with finer than 16-mesh cloth can be supplied at slight extra cost.)

8 METAL STOOLS, SUBFRAMES

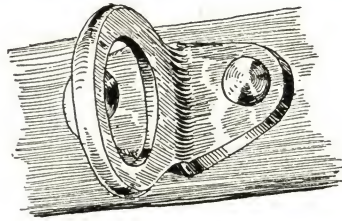
(Metal stools and rolled steel or pressed metal subframes can be supplied where specified. Consult the nearest Fenestra office.)



FLORENCE CRITTENTON HOSPITAL DETROIT MICHIGAN
SMITH HINCHMAN & GRYLLS, ARCHITECTS



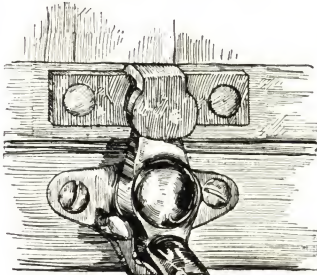
Finger
Pull 1130 for D



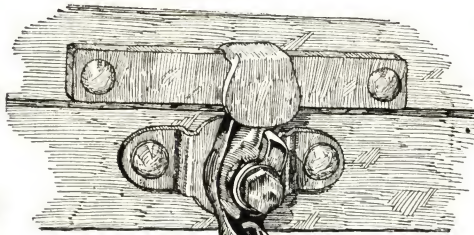
Pole Ring 151
for D, C & B



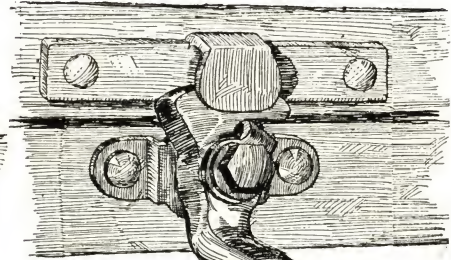
Finger
Pull 1230 for C & B



Handle
1122
for D



Handle
1223
for C & B



Handle
1071
for C



Friction Stay 1101 for D



Friction Stay 203 for C & B

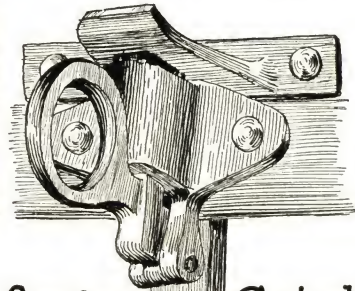
Fenestra
1931

FENMARK, SCREENED FENMARK &
FENMARK PROJECTED HARDWARE

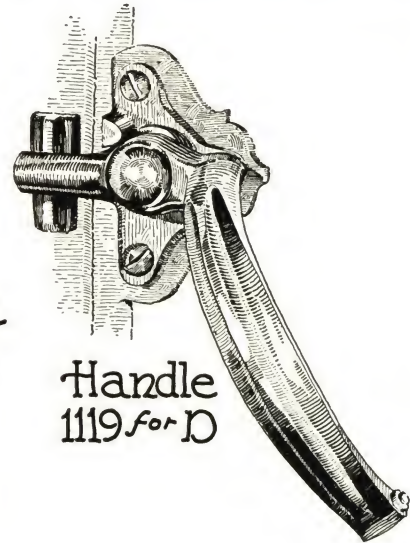
Plate No
G~415



Handle
699 for C



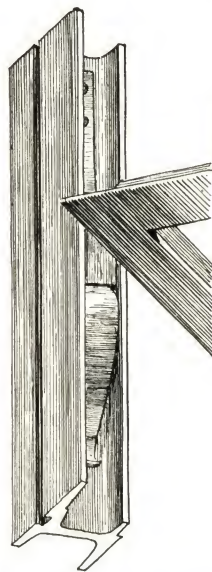
Spring Catch
739 for D, C & B



Handle
1119 for D



Handle
733 for C

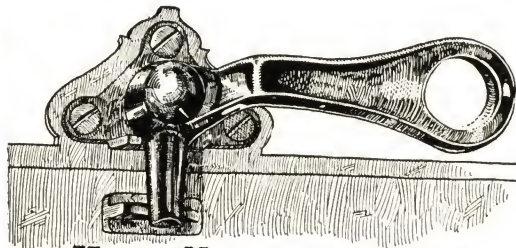


*** Series D & C ***

U.S. Specification Bronze,
Coinage finish, Polished.

*** Series B ***

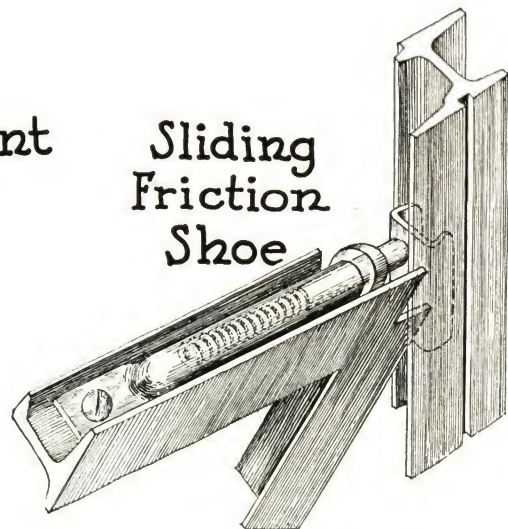
Solid Bronze, Oxidized finish.



Handle 1214 for D

Alignment
Stop

Sliding
Friction
Shoe

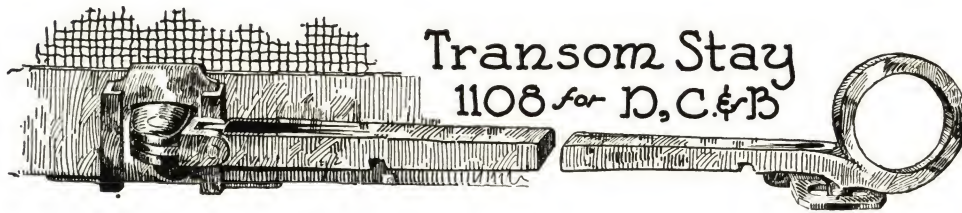


Handle
914 for C & B

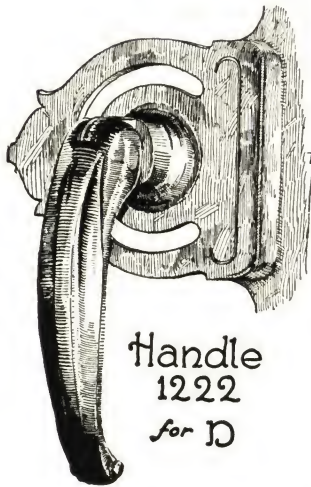
**Fenestra
1931**

**FENMARK, SCREENED FENMARK &
FENMARK PROJECTED HARDWARE**

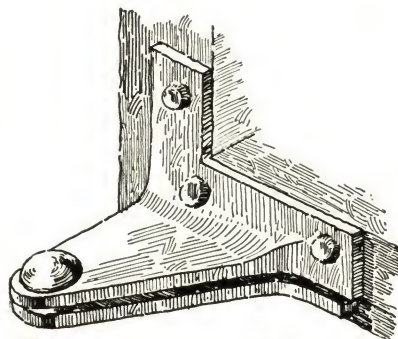
**Plate No
G-416**



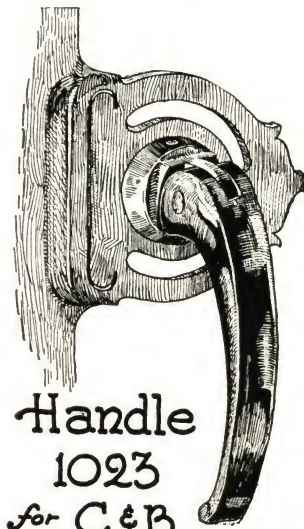
Transom Stay
1108 for D, C & B



Handle
1222
for D



Extension Hinge



Handle
1023
for C & B

*** Series D & C ***

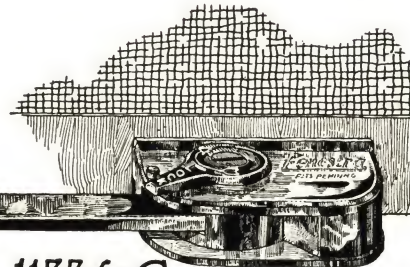
U.S. Specification Bronze,
Coinage finish, Polished.

*** Series B ***

Solid Bronze, Oxidized finish.



End of Operator 1133 for B

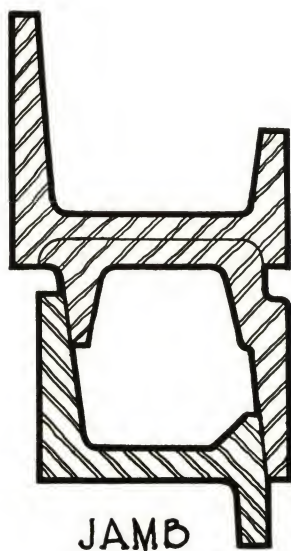
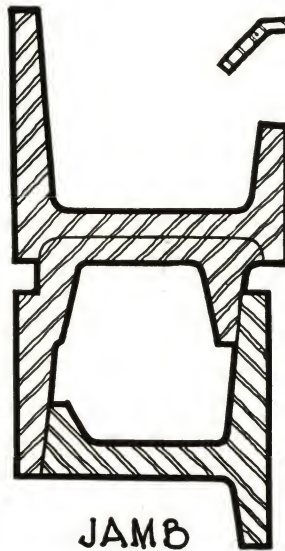
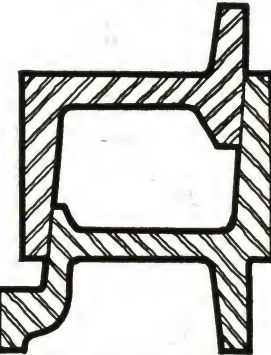
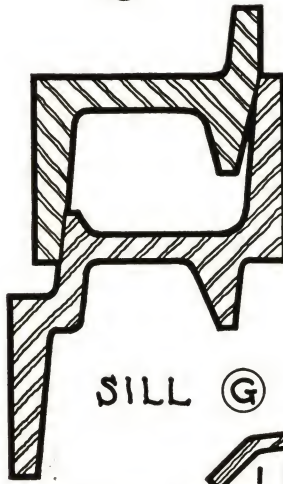


Thru-Screen Operator 1216 for D, 1133 for C

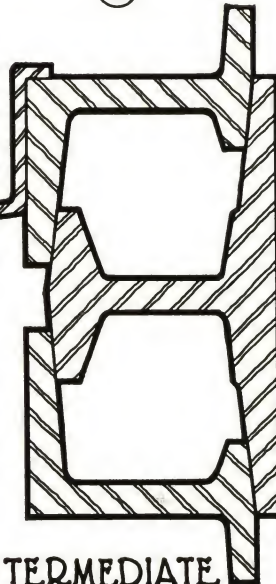
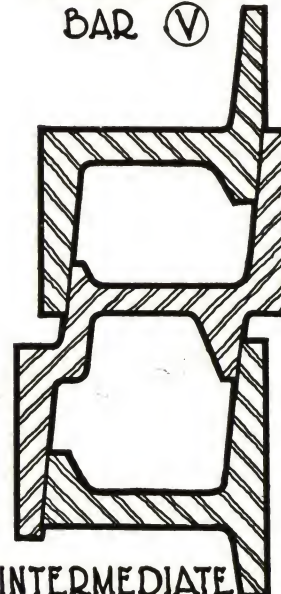
Fenestra
1931

FENMARK, SCREENED FENMARK &
FENMARK PROJECTED HARDWARE

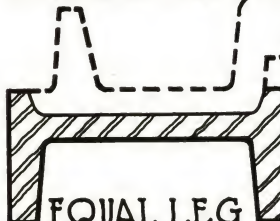
Plate No
G-417

JAMB
(H)JAMB
(L)INTERMEDIATE
BAR (N)INTERMEDIATE
BAR (V)

SILL (G)

MUNTIN
(C)INTERMEDIATE
BAR (F)INTERMEDIATE
BAR (P)

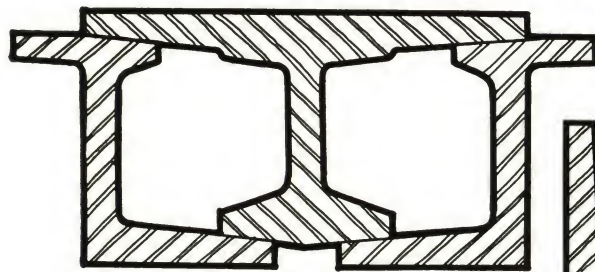
SEE PLATES G-409 & G-103
FOR TYPICAL UNITS SHOW-
ING APPLICATION OF SECTIONS

EQUAL LEG
FRAME SECTION

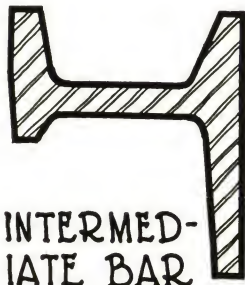
Fenestra
1931

FENMARK WINDOWS
FULL SIZE SECTIONS

Plate No
G-405

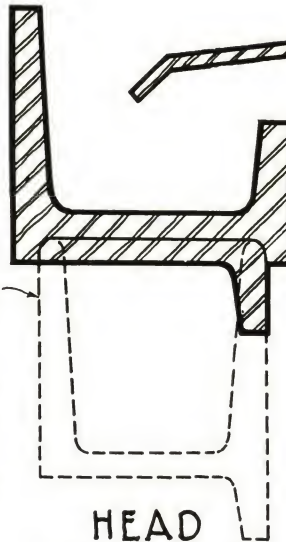


MEETING RAIL (K)

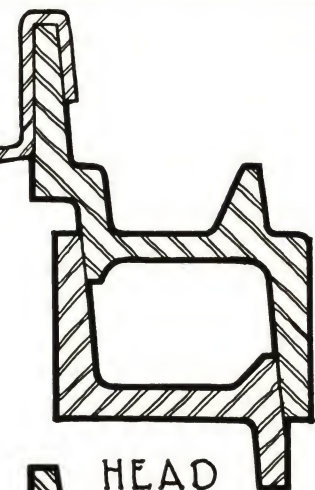


INTERMEDIATE BAR (B)

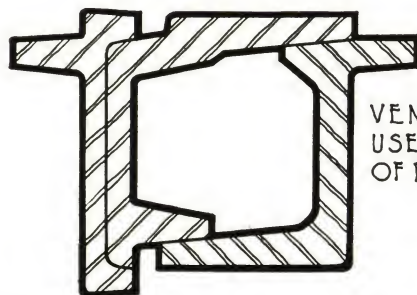
DOTTED SECTION SHOWS SUGGESTED METHOD OF MAINTAINING SIGHT LINE AT JAMB ~ WILL BE FURNISHED AS AN ~ EXTRA IF SPECIFIED



HEAD OR JAMB (D)

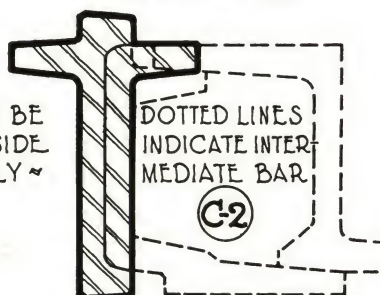


HEAD (M)



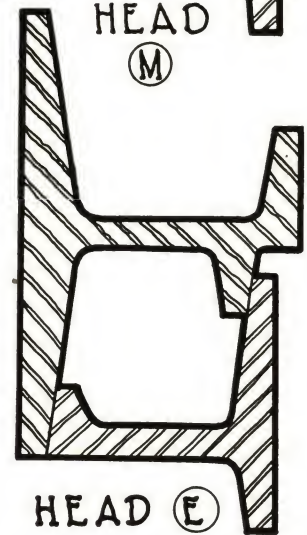
INTERMEDIATE BAR (A-2)

VENTS MAY BE USED ONE SIDE OF BAR ONLY ~

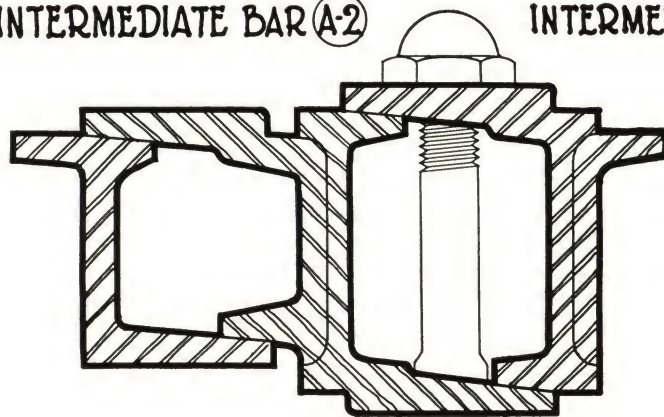


INTERMEDIATE BAR (B-2)

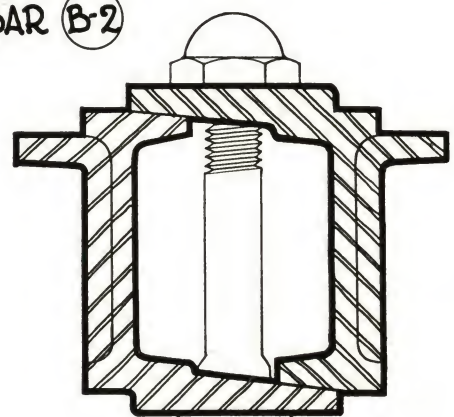
DOTTED LINES INDICATE INTERMEDIATE BAR (C-2)



HEAD (E)



MULLION (J)



MULLION (S)

Fenestra
1931

FENMARK WINDOWS
FULL SIZE SECTIONS

Plate No
G-406



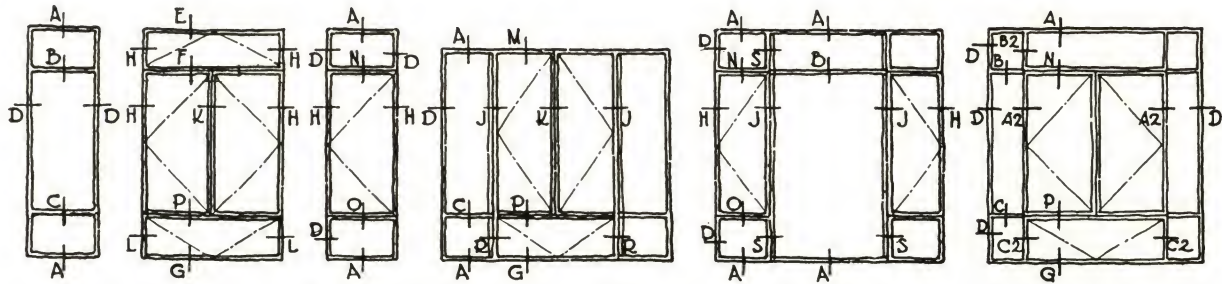
ALL FENMARK WINDOW DIMENSIONS ARE EQUAL TO THE CLEAR OPENING. FRAME MEMBERS PROJECT BEYOND THESE ON ALL FOUR SIDES FOR ANCHORAGE IN THE BUILDING CONSTRUCTION ~ ~ ~

AT EXTRA COST ALL
TYPES MAY BE FURN-
ISHED WITH MUNTINS

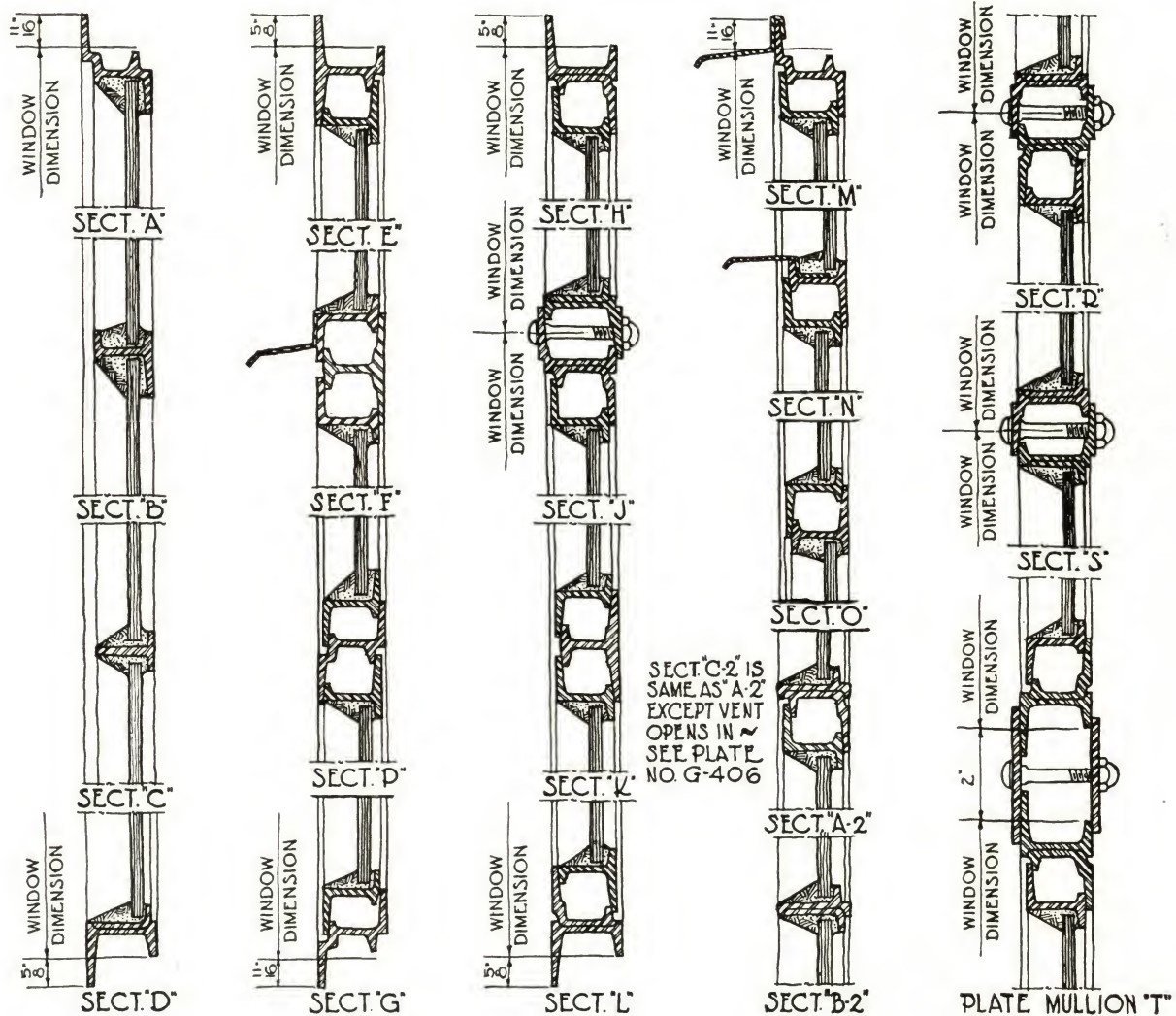
STD. WIDTHS ARE
4'-6", 4'-0", 3'-6"
3'-0" AND 2'-6"

LEFT HAND CASEMENTS ARE~
HINGED AT LEFT. ~ ~ ~
DIMENSIONS AT LEFT OF TYPES
ARE GLASS HEIGHTS. ~ ~ ~
FOR DETAILS SEE PLATE NO. G-409

Plate No
G-408



TYPICAL ELEVATIONS



NOTE: DETAILS ON THIS PLATE ALSO APPLY TO SCREENED FENMARK WINDOWS.

Fenestra
1931

FENMARK WINDOWS
COMBINATION DETAILS

Plate No
G-409



TYPICAL
FENMARK WINDOW

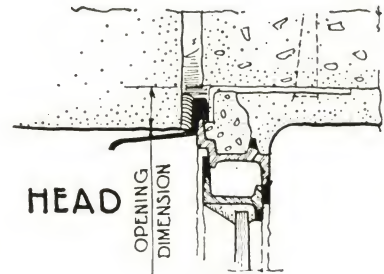
NOTES

CAULKING BETWEEN WINDOW
FRAME AND BUILDING CON-
STRUCTION SHALL BE SUPPLIED
AND APPLIED BY OTHERS

SECTIONS ON THIS PLATE
ARE "M", "P", "K", "G" AND "H" AS
SHOWN ON PLATES NUMBERS
G-405, G-406



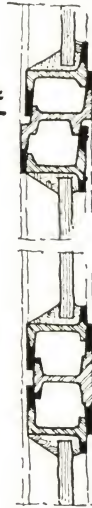
INTEGRITY TRUST COMPANY BUILDING
PAUL P. CRET - ARCH'T. PHILADELPHIA, PA.



HEAD

OPENING
DIMENSION

INTERMEDIATE
BAR



MEETING
RAIL

OPENING
DIMENSION

SILL

2"
4"

JAMB

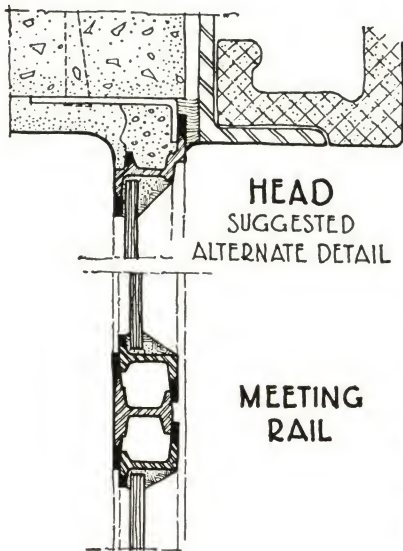
OPENING
DIMENSION

SCALE OF DETAILS - 3"=1'-0"

Fenestra
1931

FENMARK WINDOWS
STONE INSTALLATION

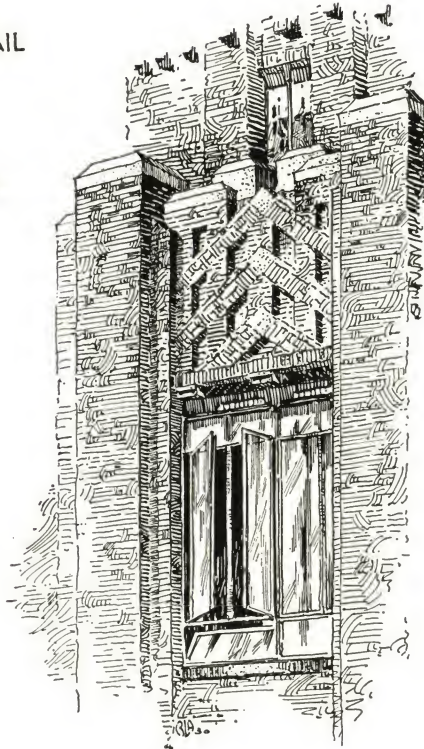
Plate No
G-411



HEAD
SUGGESTED
ALTERNATE DETAIL

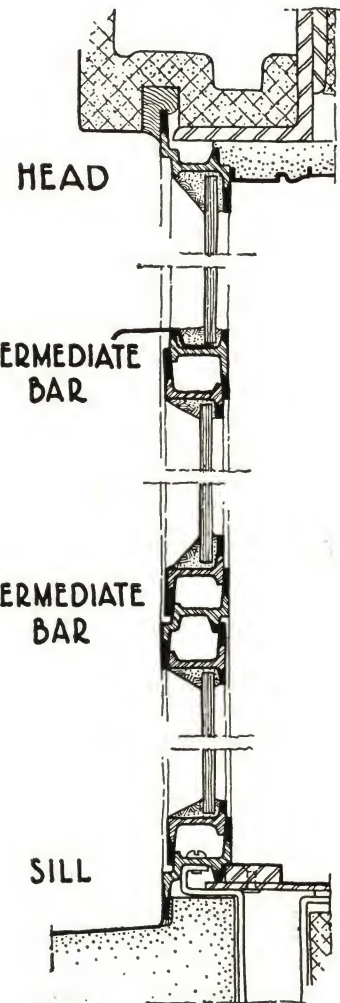
MEETING
RAIL

CAULKING BETWEEN WINDOW
FRAME AND BUILDING CON-
STRUCTION SHALL BE SUPPLIED
AND APPLIED BY OTHERS



SECTIONS ON THIS PLATE
ARE "A", "N", "P", "G", "H" AND "K"
SHOWN ON PLATES NUMBERS
G-405, G-406

ARCHITECTS BUILDING
PHILADELPHIA - PENNA
BISSEL & SINKLER - BOYD, ABEL & GUGERT
A.H. BROCKIE - I.T. CATHERINE - P. P. CRET
FOLSOM & STANTON - E. B. GILCHRIST
R.H. JOHNSON - G.I. LOVATT - R. R. MCGOODWIN
RANKIN & KELLOGG - H. STERNFELD - THOMAS
MARTIN & KIRKPATRICK - F. D. WATSON
C. E. WUNDER - ZANTZINGER, BORIE & MEDARY
ASSOCIATED ARCHITECTS

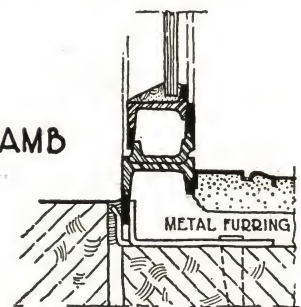


HEAD

INTERMEDIATE
BAR

INTERMEDIATE
BAR

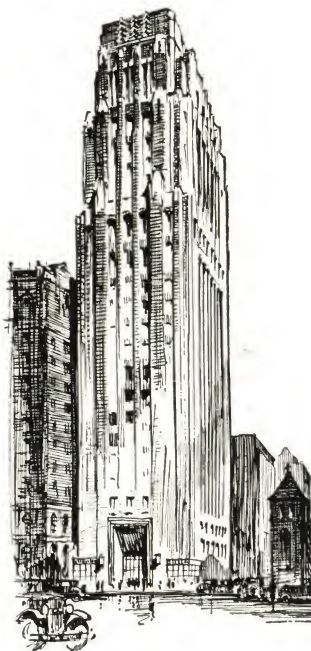
SILL



JAMB

METAL FURRING

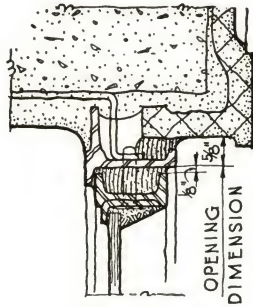
SCALE OF DETAILS - 3" = 1'-0"



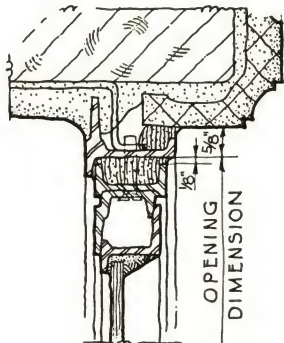
Fenestra
1930

FENMARK WINDOWS
TERRA COTTA INSTALLATION

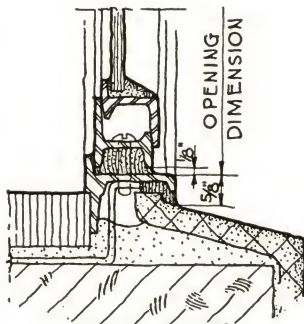
Plate No
G-412



HEAD



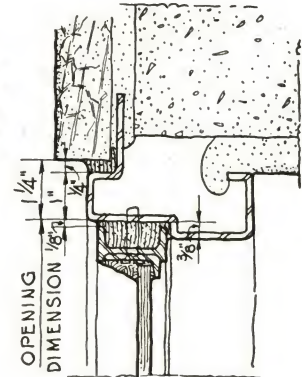
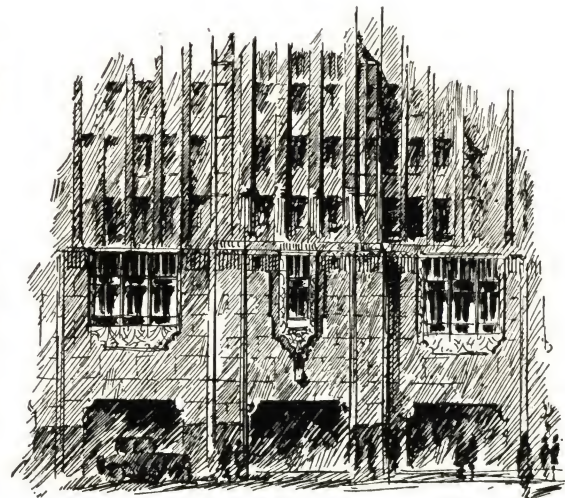
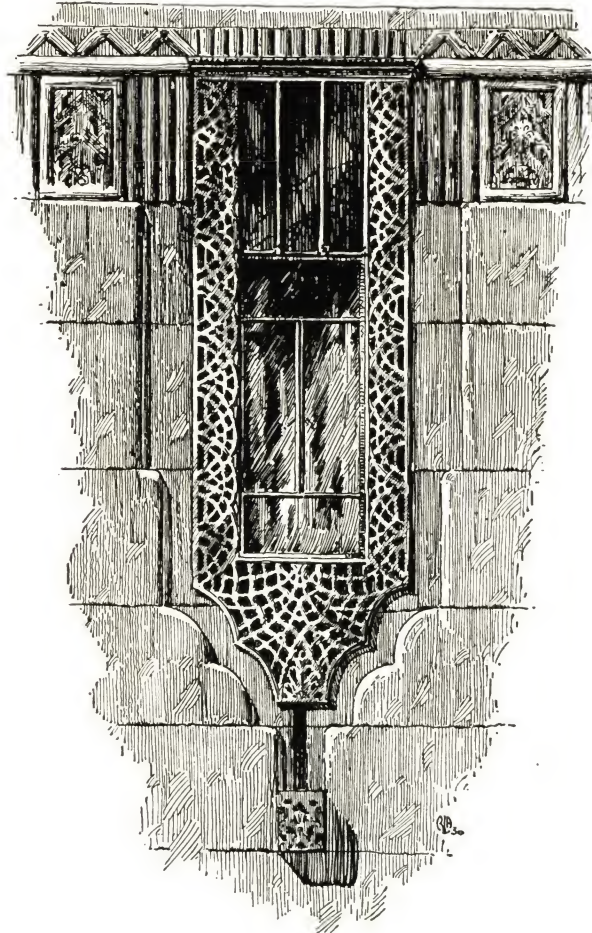
JAMB



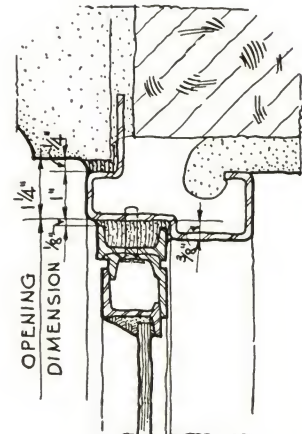
SILL

CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS.

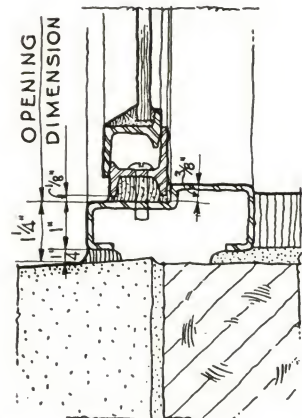
DETAILS SHOW ROLLED & PRESSED STEEL SUB-FRAMES IN CONNECTION WITH EQUAL LEG SASH FRAME SECTION



HEAD



JAMB



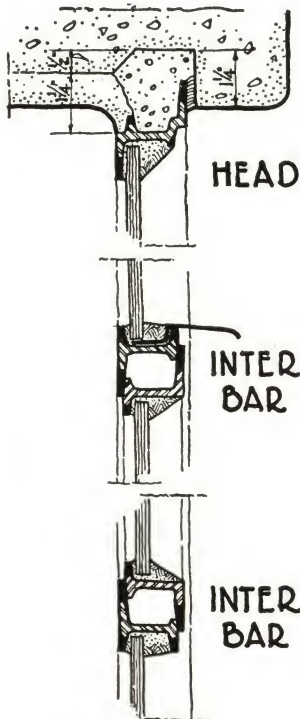
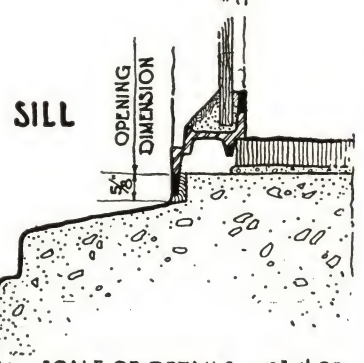
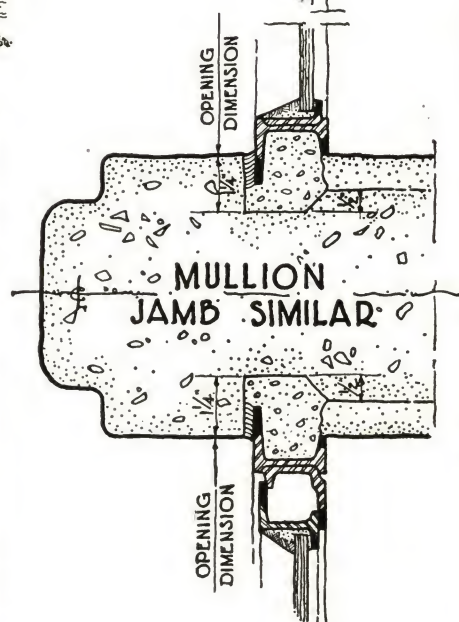
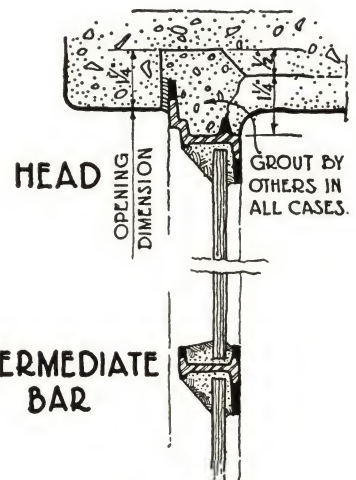
SILL

SCALE OF DETAILS - 5" = 1'-0"

Fenestra
1930

FENMARK WINDOWS METAL FRAME INSTALLATION

Plate No
G-413

SECTION THRU
SIDE LIGHTS

SCALE OF DETAILS - 3"=1'-0"

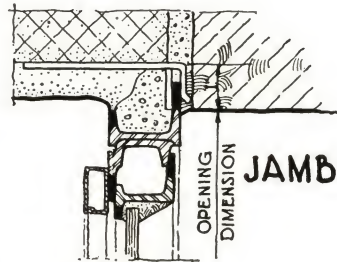
CAULKING BETWEEN WINDOW
FRAME AND BUILDING CON-
STRUCTION SHALL BE SUPPLIED
AND APPLIED BY OTHERS

SECTIONS ON THIS PLATE
ARE "A", "N", "D", "O" AND "H" AS
SHOWN ON PLATES NUMBERS
G-405, G-406

Fenestra
1930

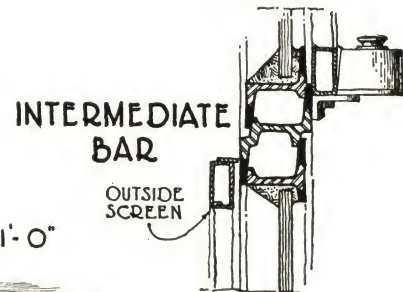
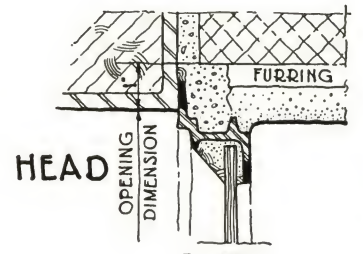
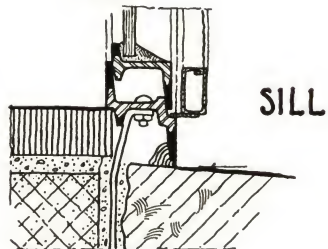
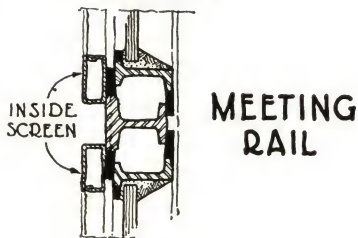
FENMARK WINDOWS
CONCRETE INSTALLATION

Plate No
G-414

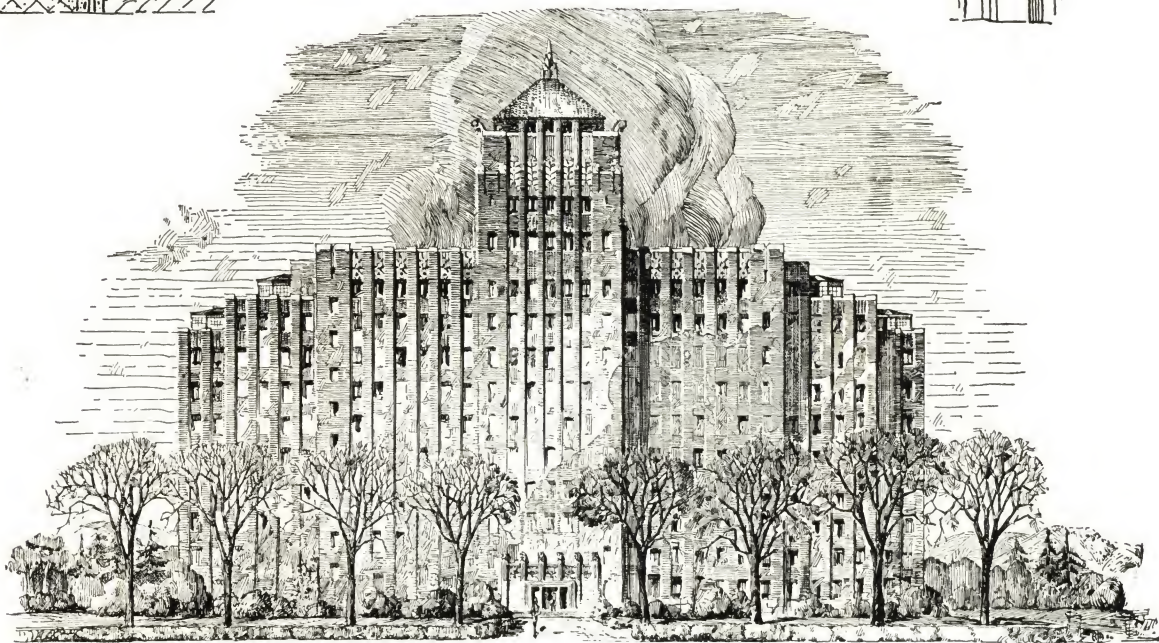


CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS.

SECTIONS ON THIS PLATE ARE "H", "L", "G", "A", "N" AND "P" AS SHOWN ON PLATES NUMBERS G-405, G-406



SCALE OF DETAILS - 3" = 1'-0"

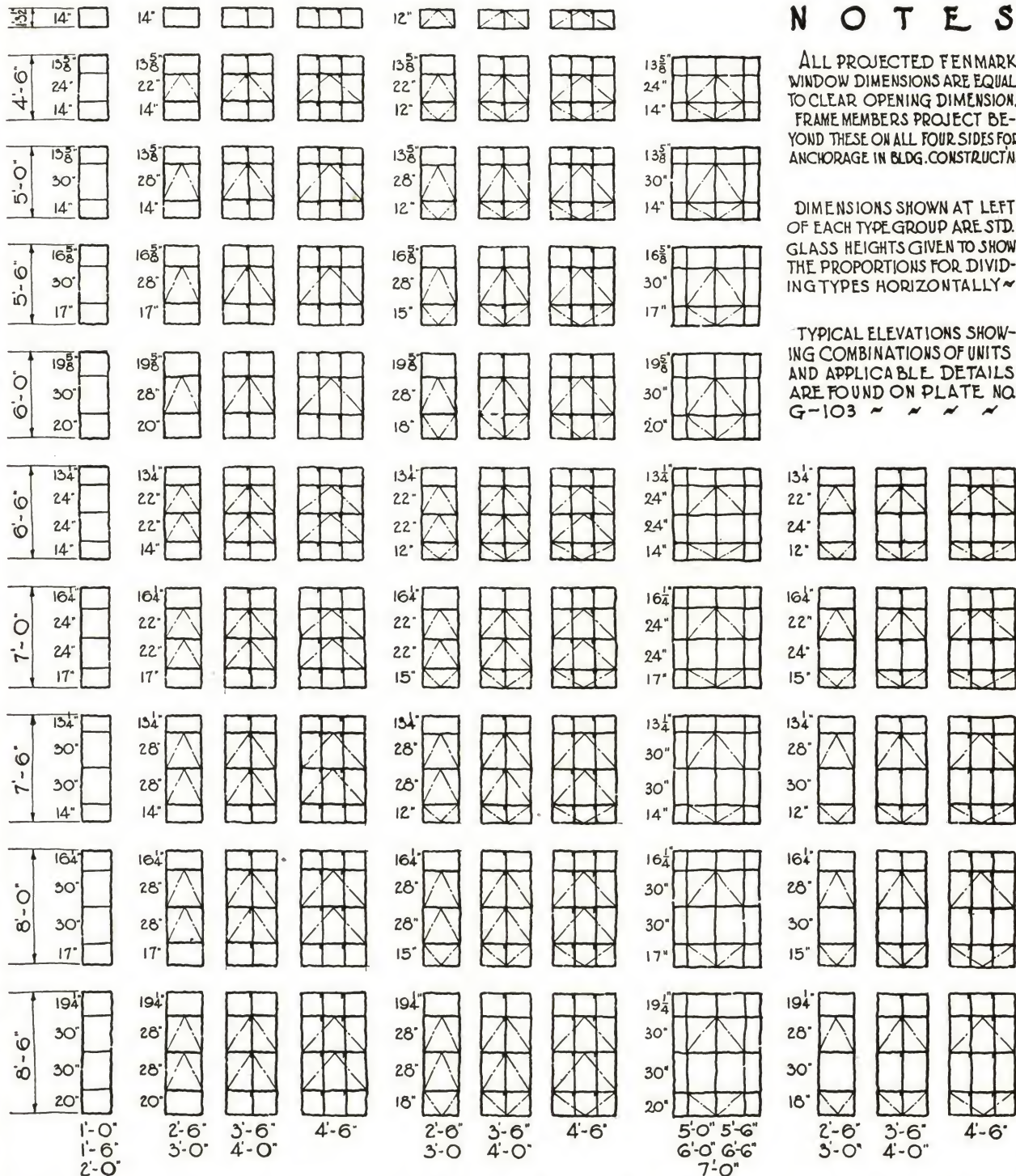


HARBORVIEW HOSPITAL KINGS COUNTY SEATTLE WASH
THOMAS, GRAINGER & THOMAS - ARCHITECT'S
DR. WILLIAM H. WALSH - CHICAGO - HOSPITAL CONSULTANT

Fenestra
1931

SCREENED FENMARK
TYPICAL HOSPITAL INSTALLATION

Plate No
G-501

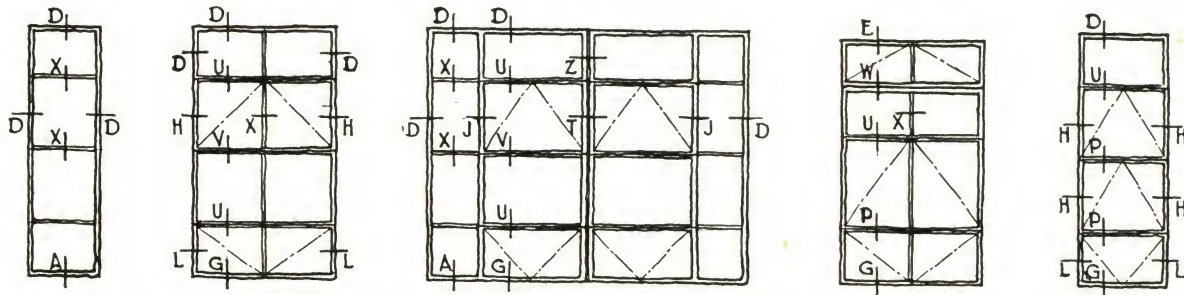


SIZES GIVEN UNDER EACH COLUMN ARE STANDARD WIDTHS OF CLEAR OPENINGS

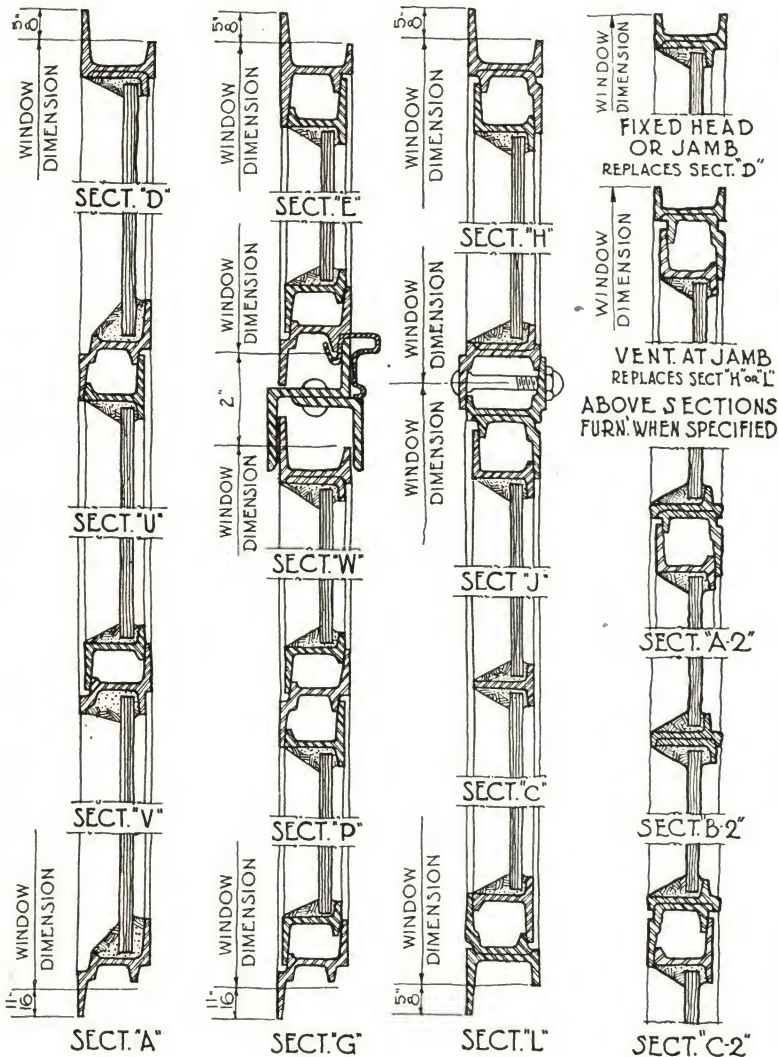
Fenestra
1931

FENMARK PROJECTED
TYPES AND SIZES

Plate No
G-102



TYPICAL ELEVATIONS



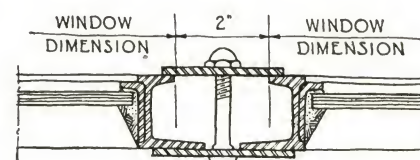
NOTES

FULL SIZE SECTIONS ARE FOUND ON PLATES NUMBERS G-405, G-406

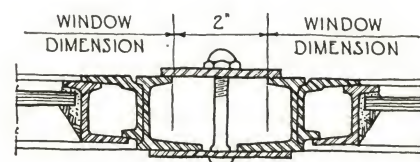
WIDTH OF BARS "W", "Z" AND "T" MUST BE ADDED TO OVER-ALL SIZES WHEN COMBINED UNITS ARE USED WITHIN MASONRY OPENING.

SECTION "W" IS LIMITED TO OPENINGS UP TO 9'-0" IN WIDTH

SECTION "J" SHOWS HOW UNITS MAY BE COMBINED WITHOUT USE OF PLATE MULLION AND MUST BE SPECIFIED IF DESIRED.



SECT. "Z"



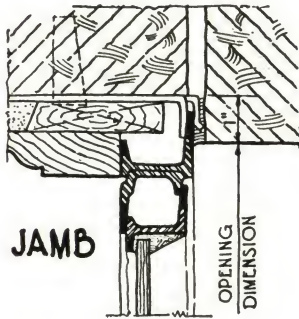
SECT. "T"

Fenestra
1931

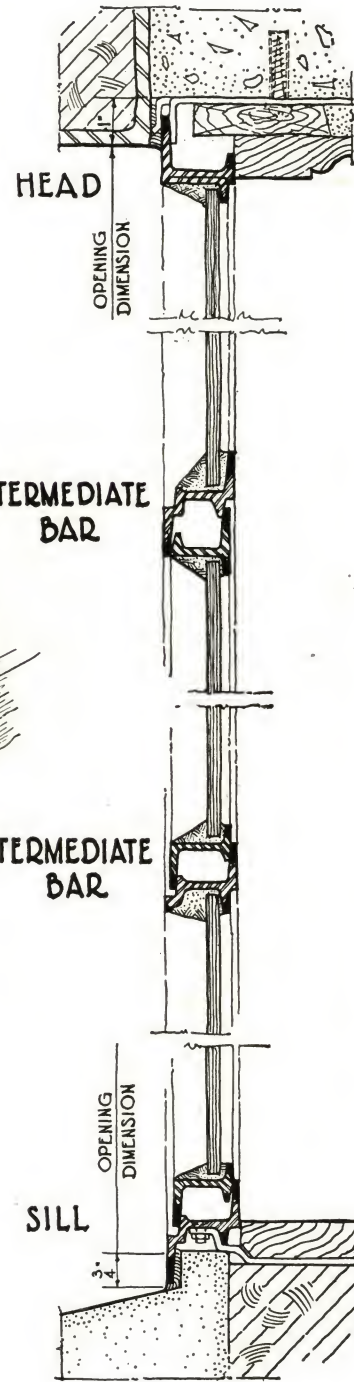
FENMARK PROJECTED
COMBINATION DETAILS

Plate No
G-103

SCALE OF DETAILS - 3" = 1'-0"



CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS



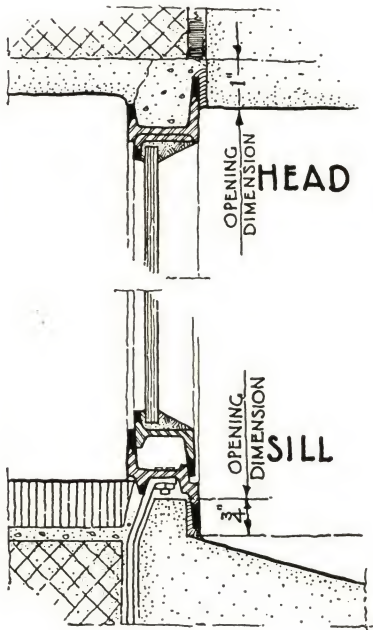
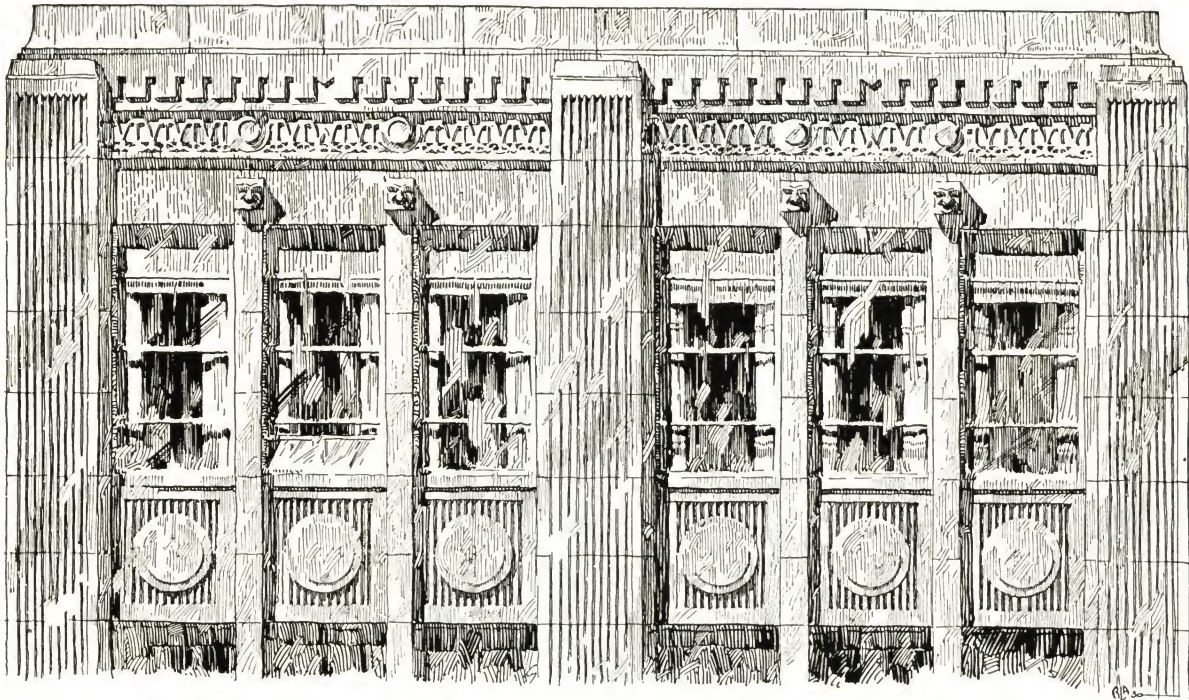
SECTIONS ON THIS PLATE ARE "D", "U", "V", "G" AND "H" AS SHOWN ON PLATES NUMBERS G-405, G-406

GRISWOLD BUILDING
DETROIT - MICHIGAN
ALBERT KAHN INC.
ARCHITECT

Fenestra
1930

FENMARK PROJECTED
BRICK INSTALLATION

Plate No
G-104

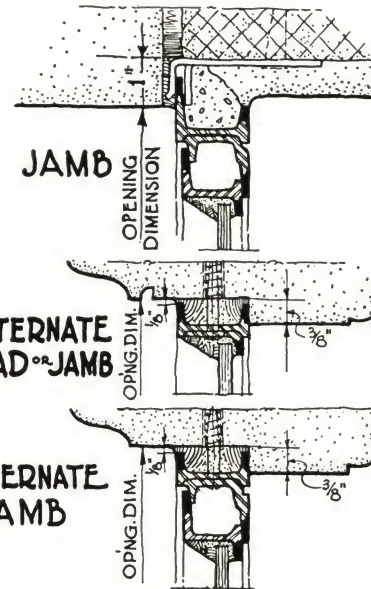


JOSEPH HILTON BLDG.
NEW YORK CITY
D. R. SWARTBURG
ARCHITECT

NOTES

CAULKING BETWEEN WINDOW
FRAME AND BUILDING CON-
STRUCTION SHALL BE SUPPLIED
AND APPLIED BY OTHERS.

SECTIONS ON THIS PLATE
ARE "D", "G", "H", "B2" AND "A-2"
SHOWN ON PLATES NUMBERS
G-405, G-406



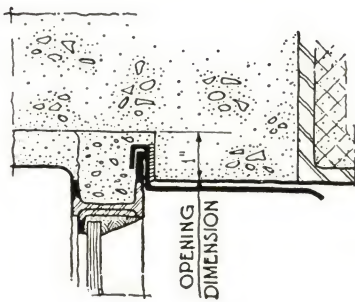
THE TWO DETAILS DIRECTLY ABOVE ~
SHOW USE OF EQUAL LEG FRAME SECTION

SCALE OF DETAILS - 3"-1'-0"

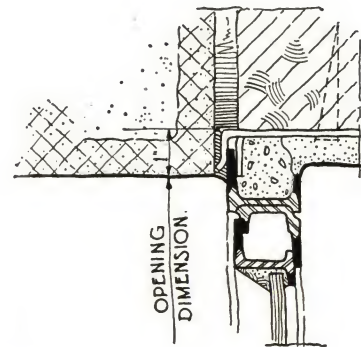
Fenestra
1930

FENMARK PROJECTED
STONE INSTALLATION

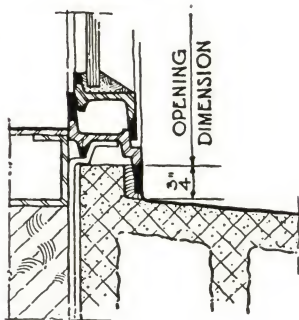
Plate No
G-105



HEAD



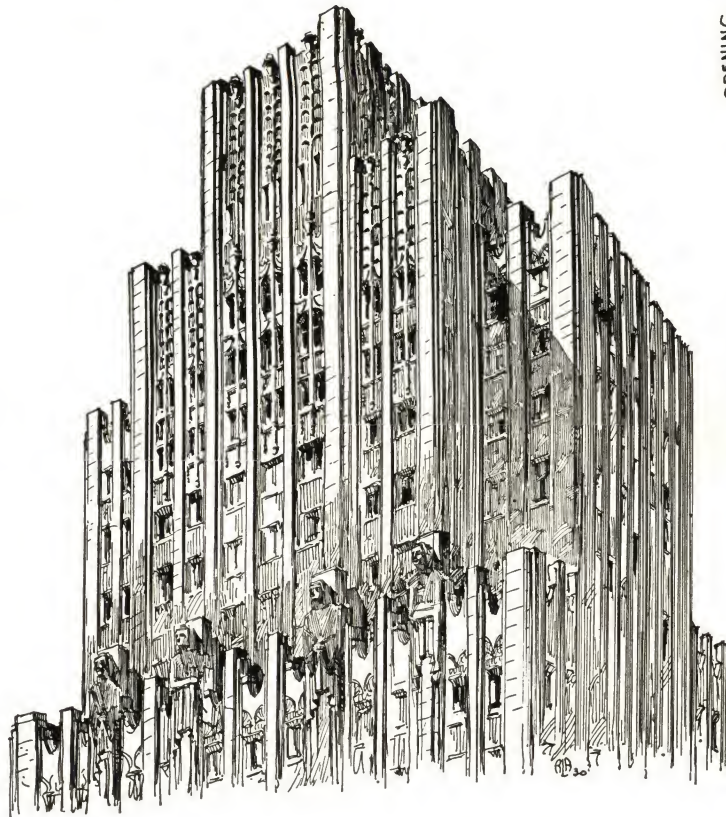
JAMB

INTERMEDIATE
BARINTERMEDIATE
BAR

SILL



MULLION



DETAIL UPPER PORTION
CONTINENTAL LIFE INSURANCE
BUILDING - ST. LOUIS, MISSOURI
WILLIAM B. ITTNER - ARCHITECT

NOTES

CAULKING BETWEEN WINDOW
FRAME AND BUILDING CON-
STRUCTION SHALL BE SUPPLIED
AND APPLIED BY OTHERS.

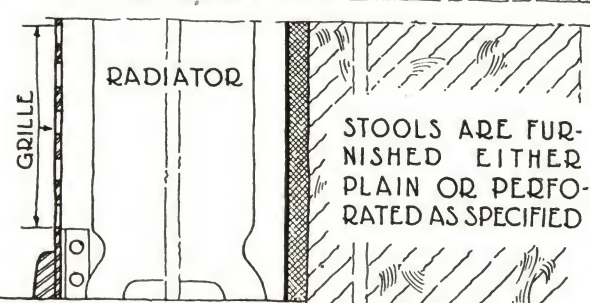
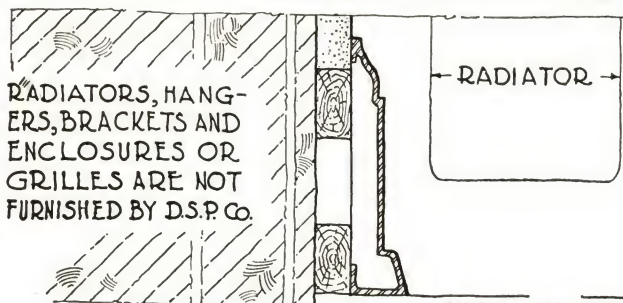
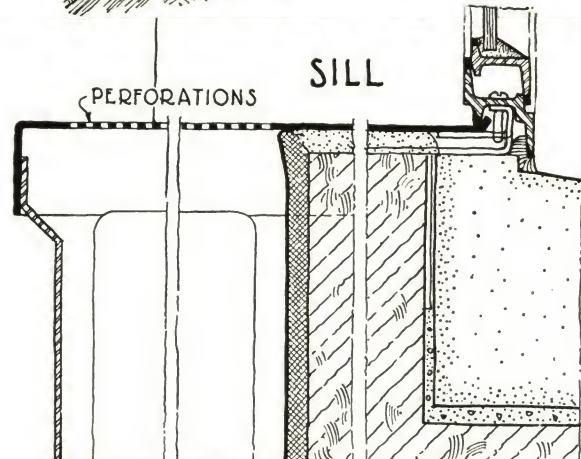
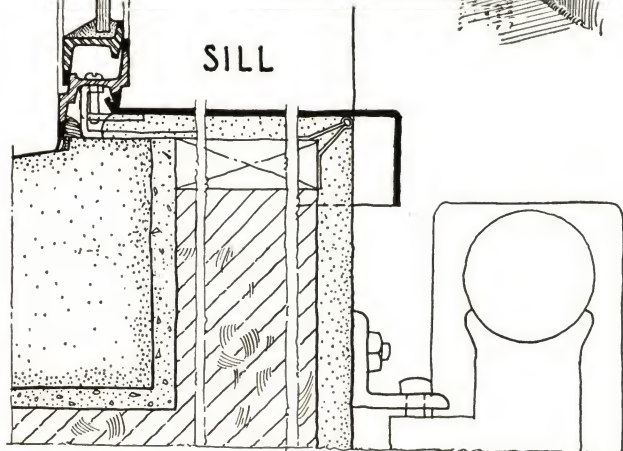
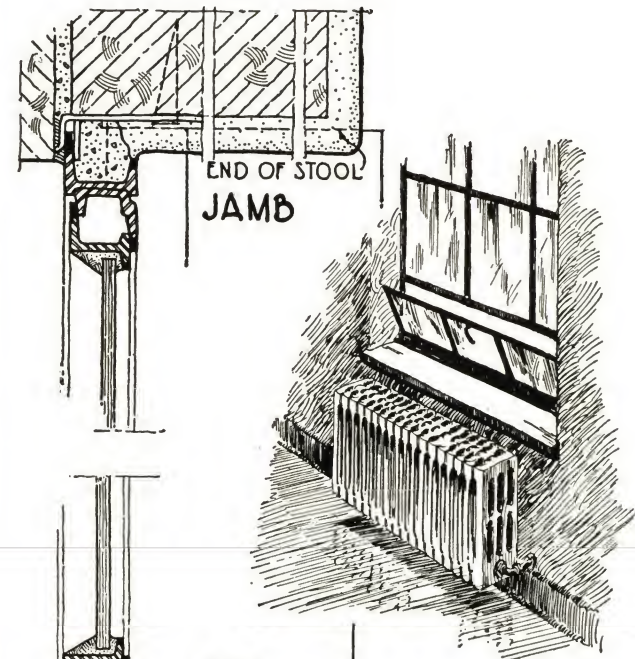
SECTIONS ON THIS PLATE
ARE "D", "U", "P", "G", "H" AND "J" AS
SHOWN ON PLATES NUMBERS
G-405, G-406

SCALE OF DETAILS - 3" = 1'-0"

Fenestra
1930

FENMARK PROJECTED
TERRA COTTA INSTALLATION

Plate No
G-106



RADIATORS, HANGERS, BRACKETS AND ENCLOSURES OR GRILLES ARE NOT FURNISHED BY D.S.P. CO.

STOOLS ARE FURNISHED EITHER PLAIN OR PERFORATED AS SPECIFIED

SCALE OF DETAILS - 3" = 1'-0"

SECTION THRU STOOL SHOWING RADIATOR TOTALLY EXPOSED

SECTION THRU STOOL SHOWING RADIATOR TOTALLY CONCEALED

Fenestra
1930

FENMARK WINDOWS
METAL STOOL SUGGESTIONS

Plate No
G-108

FENESTRA "FENCRAFT" CASEMENTS

SPECIFICATIONS

1 GENERAL

- 1a ALL windows shall be Fenestra "Fencraft," as manufactured by Detroit Steel Products Company.

2 MATERIAL AND CONSTRUCTION

- 2a FRAME sections shall have a minimum depth of $1\frac{1}{4}$ " from front to back. Frames and swing leaves shall be of hot rolled, solid steel providing continuous, two-point, flat weathering contact between swing leaves and frame and shall be further weathered by baffles at both inner and outer contacts.

- 2b ALL sections shall be rerolled, cold, to make them true and straight and shall be individually electrically tested for straightness.

- 2c FRAMES and swing leaves shall be mitered at all corners and electrically butt welded. All welds shall be ground to a smooth finish.

(Mullions or transom bars are provided between adjacent units as specified.)

(Heavy, electro-galvanized steel drip is supplied over all swing leaves.)

(Sill and jamb anchor clips with bolts for attachment to frame are supplied where required.)

3 ATTACHED HARDWARE

- 3a ALL side hung swing leaves shall open out on two heavy, friction (cleaning) hinges of solid rolled, sherardized steel with heavy reentrant angle fillets. Each hinge shall be equipped with two friction washers. Washers and hinge members shall be held by lock washers and bronze studs with acorn nuts so that by adjusting the nuts, friction may be increased or decreased.

- 3b ALL top hung, open-out transoms and all bottom hung, open-in transoms shall be hung on heavy, flush, sherardized, wrought steel hinges with bronze hinge pins. Open-in transoms shall be supported by two bronze, friction side arms with friction shoes moving in bronze channels attached to the frame members.

- 3c EACH side hung swing leaf shall have an ornamental locking handle bracket of solid rolled steel, electrically welded to the swing leaf stile.

- 3d BRASS strikes and wrought steel keepers shall be supplied, attached to the window frame as required.

4 DETACHED HARDWARE

- 4a ALL locking handles shall be: (1) U. S. Government Specification solid bronze of ornamental design and coinage finish obtained without the use of plating or chemicals and equipped with friction

springs, or (2) same, equipped with friction clevises, or (3) oxidized bronze with friction clevises.

(Handles 1119, 699 or 198.)

- 4b SWING leaf operating hardware shall consist of a finger pull solidly attached to the sill of each swing leaf (used with friction hinges where specified) or a solid bronze thumb screw operator (with non-friction hinges).

(Finger Pull 1130 or 1230, Operator 1101 or 203.)

(Double Locking Device in bronze only, where specified, at added cost.)

- 4c PROVIDE solid bronze peg and stay for all top hung, open-out transoms and a solid bronze, automatic spring catch for all open-in transoms.

(Peg and Stay 1110. Spring Catch 739.)

5 PAINTING

- 5a ALL casements shall receive one coat of rust resisting primer and one coat of gray lead and oil paint at the factory—each coat to be sprayed on and baked separately.

(Provide for additional coat of paint by the painting contractor after erection of windows and before glazing. Final painting should be deferred until three weeks after glazing to permit putty to set. Where desired, Fenestra Construction Co. will do field painting under a separate contract.)

6 ERECTION

- 6a ALL casements shall be erected plumb and true and caulked with mastic to form a weather-tight union between window frames and mullions, transom bars or building construction. All hardware shall be applied in accordance with manufacturer's instructions.

(Mastic is supplied—3 lbs. to each 10 lineal feet of perimeter.)

(Include in the masonry specifications, that all masonry openings shall be constructed in accordance with Fenestra installation details so that the windows may be installed after the masonry is completed. Also include that all mortar grouting and pointing shall be done by the mason contractor after the windows have been installed.)

7 GLASS AND GLAZING

- 7a ALL glass shall be bed puttied and face puttied and further secured by copper-plated, spring glazing clips furnished by the window manufacturer.

(Putty should be high grade, quick setting, steel window putty. Ordinary wood window putty cannot be used. Glass should be $\frac{3}{8}$ " or $\frac{1}{4}$ " plate. Single or double strength glass is not recommended. Glass and glazing labor is supplied by Fenestra Construction Co. under separate contract if desired.)

8 SHADING

(All shades must be located at least $2\frac{1}{2}$ " back from the face of the window to clear hardware. Each casement is drilled at both jambs near the head for the attachment of standard shade brackets.)

9 METAL STOOLS AND SUBFRAMES

(Metal stools and rolled steel or pressed steel subframes can be supplied if specified. Consult the nearest Fenestra office.)

10 FRENCH DOORS

(For use with "Fencraft" and "Screened Fencraft" Casements, Fenestra French Doors of similar design, quality and workmanship can be supplied in standard sizes, where specified. Shop drawings are submitted for the architect's approval before fabrication.)

(By the use of mullions, doors may be combined with side lights and transoms to fill door openings of various sizes.)

(Doors can be made to open in or out. Open-out doors have a heavy, electro-galvanized drip at the head.)

(Open-in doors have a heavy, non-corrosive, extruded drip at the sill. All doors have a double kick plate in the lower panel with wood inserted between 16-gauge steel sheets as a sound deadener. All doors have bronze hinges and pins and extruded bronze thresholds. The active leaf of each door is equipped with a solid bronze locking handle operating a concealed, bronze cremone bolt which actuates three locking bolts. Shot bolts are provided on the opposite leaf. A dead lock is provided to lock the doors from the inside. All doors are glazed from the outside.)

(Screens for French Doors are not supplied by Detroit Steel Products Co.)

"FENCRAFT" OPEN-IN CASEMENTS

SPECIFICATIONS

1 GENERAL

- 1a ALL windows shall be Fenestra "Fencraft" Open-In Casements as manufactured by Detroit Steel Products Company.

(Standard Types of "Fencraft" Open-In Casements are 2214 Bottom Hung and CH 2. Also 22, 2214 R-L, 23, 2316 R-L, 24, 2418 R-L, 25, 25-1-10 R-L, as shown on Plate A 515.)

(Top hung open-out transom units may be used in combination with open-in casement units if desired.)

2 MATERIAL AND CONSTRUCTION

(Same as "Fencraft" Casements 2a, 2b, 2c, except that Heavy electro-galvanized steel drip is supplied at the sill of all side hung swing leaves.)

3 ATTACHED HARDWARE

- 3a HINGES for side hung swing leaves and for top hung open-out transoms and bottom hung open-in transoms shall be heavy, flush, sherardized, wrought steel with bronze hinge pins.
- 3b LOCKING handle bracket shall be solid rolled steel of ornamental design, electrically welded to the swing leaf stile.

4 DETACHED HARDWARE

- 4a ALL locking handles shall be (1) U. S. Government specification, solid bronze, of ornamental design and coinage finish obtained without the use of plating or chemicals and equipped with friction springs, or (2) same equipped with friction clevises.

(Handles 1119 or 1299. Double locking device in bronze where necessary at added cost.)

- 4b PROVIDE solid bronze peg and stay for all top hung open-out transoms and solid bronze automatic spring catch for all bottom hung open-in transoms.

(Peg and Stay 1110. Spring Catch 739.)

- 4c PROVIDE bronze strikes and wrought steel keepers attached to the casement frame as required.

- 4d EACH side hung swing leaf and each bottom hung open-in transom shall be provided with flat type friction adjuster consisting of a solid bronze arm and sliding adjustable friction shoe moving in a bronze channel attached to the frame in such a manner as to be entirely concealed when the casement is closed.

(No other adjusters are necessary on "Fencraft" Open-In Casements.)

5 PAINTING

(Same as "Fencraft" Casements 5a.)

6 ERECTION

(Same as "Fencraft" Casements 6a.)

7 GLASS AND GLAZING

(Same as "Fencraft" Casements 7a.)

8 SHADING

(Care should be taken to attach shade and drapery brackets to the building construction in such a manner as to clear the open-in swing leaves. At extra cost, casements may be drilled in the field so that shades or glass curtains may be attached directly to the swing leaves. When this is done, jambs should be kept back 2" from the window on the inside to avoid fouling.)

9 METAL STOOLS AND SUBFRAMES

(Same as "Fencraft" Casements 9.)

10 SCREENS

SCREENS, where used, should be installed on the outside and should be kept 1½" from the face of the window to clear sill drip.

11 FRENCH DOORS

(Same as "Fencraft" Casements 10.)

SCREENED "FENCRAFT" CASEMENTS

SPECIFICATIONS

1 GENERAL

- 1a ALL windows shall be Fenestra Screened "Fencraft" Casements as manufactured by the Detroit Steel Products Company.

2 MATERIAL AND CONSTRUCTION

(Same as "Fencraft" Casements—2a, 2b, 2c.)

3 ATTACHED HARDWARE

- 3a ALL side hung swing leaves shall open out on heavy (cleaning) hinges of solid rolled, sherardized steel with heavy reentrant angle fillets. Hinge pins shall be solid bronze, accurately fitted into flanged bronze bushings.
- 3b ALL top hung, open-out transoms shall be hung on heavy, flush sherardized wrought steel hinges with bronze hinge pins.

(Bottom hung, open-in transoms are not supplied in Screened Fencraft Casements.)

- 3c EACH swing leaf shall be provided with a malleable iron keeper both riveted and welded to the swing leaf stile.

4 DETACHED HARDWARE

- 4a HANDLE brackets shall be ornamental die castings designed to accommodate and entirely conceal the locking cam and swing leaf keeper when the casement is closed.
- 4b ALL locking handles shall be equipped with lock washers and shall be: (1) U. S. Government specification solid bronze of ornamental design and coinage finish obtained without the use of plating or chemicals; or (2) solid bronze with oxidized finish.

(Handles 1222 or 1023.)

(Handles and handle brackets are assembled at the factory and are designed to be attached to the casement stile by concealed screws.)

- 4c ALL handles shall be designed with a hinge action to permit their slipping through screen escutcheons.
- 4d AN adjuster shall be provided at the sill of each casement so that the swing leaf may be opened and closed through the screen, but without touching it. Each adjuster shall consist of a solid bronze arm with fulcrum bracket, equipped with friction plate and thumb screw.

(Adjusters 1133 or 1216.)

- 4e ADJUSTER for top hung open-out transoms shall be of the notched stay type; (1) U. S. specification bronze or (2) solid bronze, oxidized;—designed to operate through the screen without touching it.

(Stay Adjuster 1108.)

5 PAINTING

(Same as "Fencraft" Casements 5a.)

6 ERECTION

(Same as "Fencraft" Casements 6a.)

7 GLASS AND GLAZING

(Same as "Fencraft" Casements 7a.)

8 SHADING

(Same as "Fencraft" Casements 8.)

9 METAL STOOLS, SUBFRAMES

(Same as "Fencraft" Casements 9.)

10 SCREENS

- 10a SCREENS shall set flat against the inside of the casement frame with locking handles and adjusters extending through the screens so that casements may be opened or closed or locked without touching the screens.

Screen frames shall be cold rolled, rust proofed steel containing a triangular reinforcing brace running the full length of the stile and shall be painted two coats of grey lead and oil, baked on. Screen cloth shall be 16-mesh oxidized bronze wire, held taut by a cap removable for rewiring. Each screen shall be provided with a 22-gauge steel escutcheon with circular hole to fit over and around the locking handle.

(Screens with bronze frames and escutcheon or with finer mesh may be had at extra cost.)

11 FRENCH DOORS

(Same as "Fencraft" Casements 10.)



Handle
699 for C



Handle
198 for B



Handle
1119 for D

*** Series D & C ***

U.S. Specification Bronze,
Coinage finish, Polished. ~

*** Series B ***

Solid Bronze, Oxidized finish



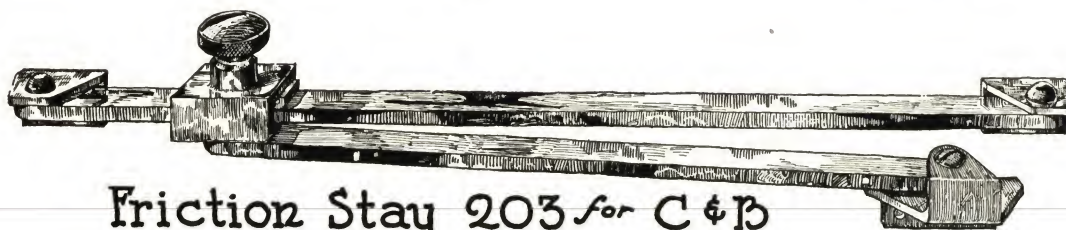
Finger
Pull 1130 for D



Finger
Pull 1230 for C & B



Friction Stay 1101 for D

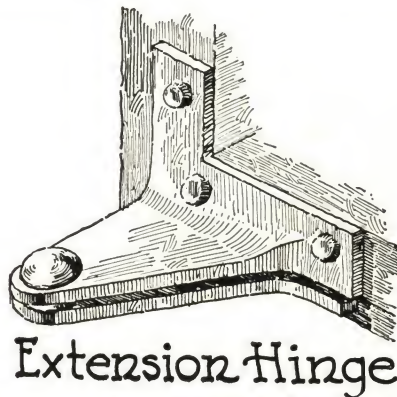
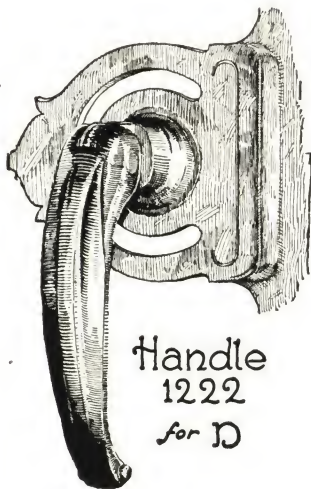
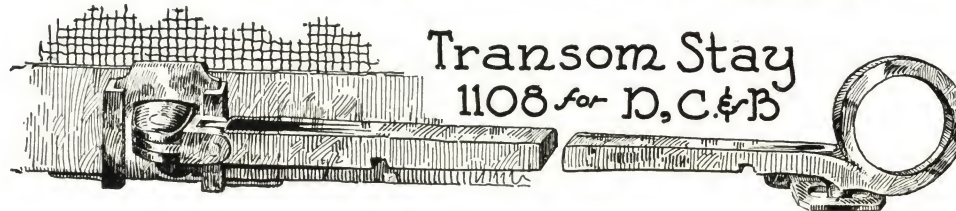


Friction Stay 203 for C & B

Fenestra
1931

FENCRAFT CASEMENTS
HARDWARE

Plate No
A-407



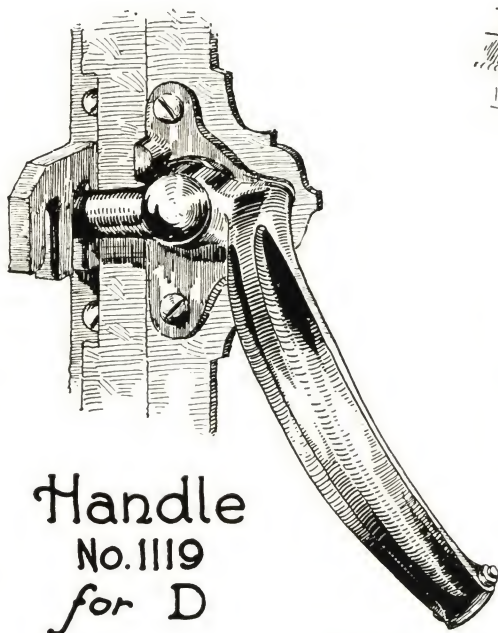
*** Series D & C ***
U.S. Specification Bronze,
Coinage finish, Polished.
*** Series B ***
Solid Bronze, Oxidized finish



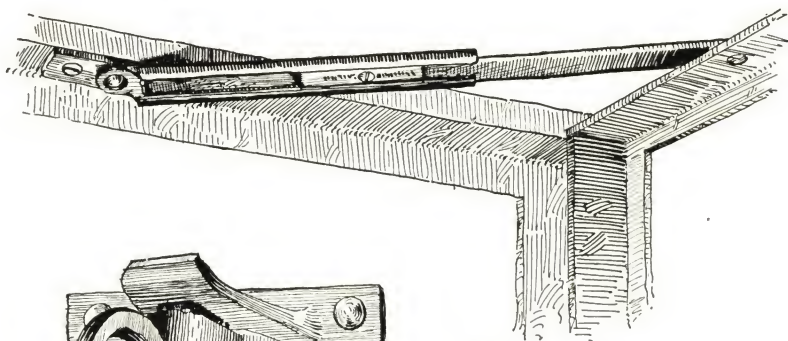
Fenestra
1931

FENCRAFT CASEMENTS
HARDWARE

Plate No
A-408



Handle
No. 1119
for D



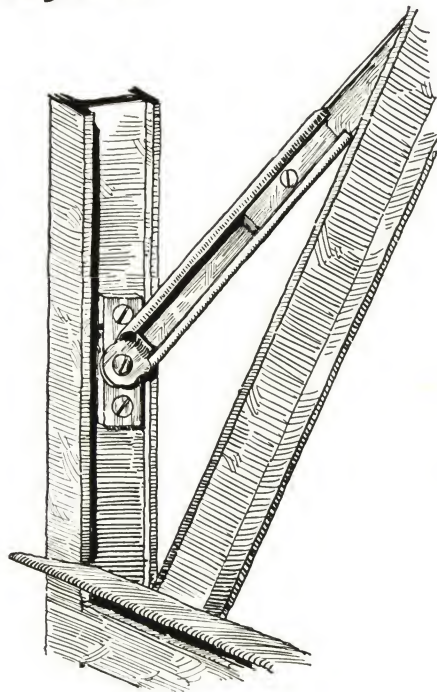
Friction
Adjuster



Spring Catch
739 for D, C & B



Handle
1299 for C



Friction
Side Arm

*** Series D & C ***

U.S. Specification Bronze,
Coinage finish, Polished.

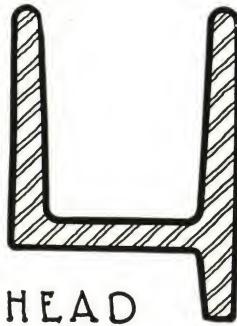
*** Series B ***

Solid Bronze, Oxidized finish

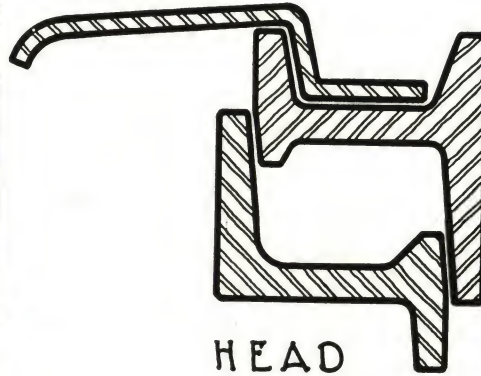
Fenestra
1931

FENCRAFT CASEMENTS
HARDWARE

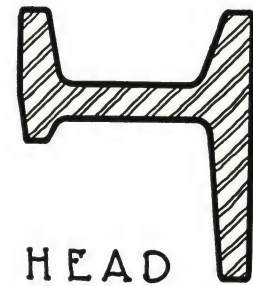
Plate No
A-409



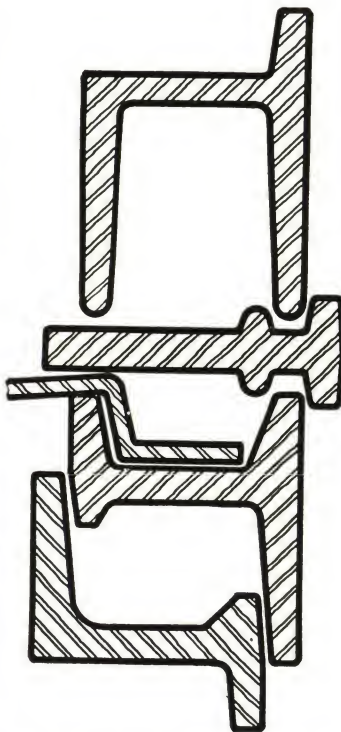
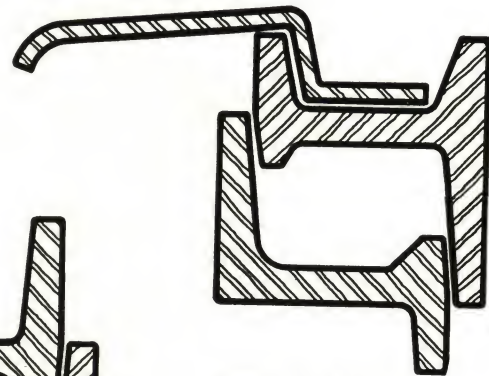
HEAD



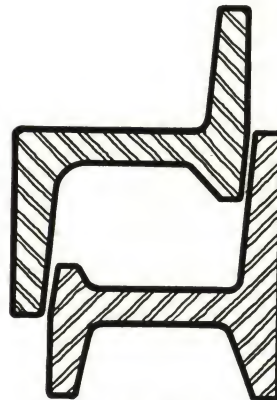
HEAD



HEAD

MULLION OR
TRANSOM BAR

TRANSOM



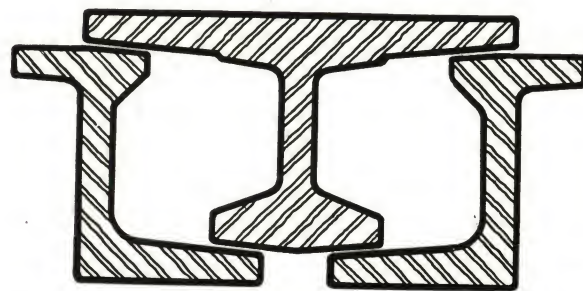
SILL



MUNTIN



ANGLE FIN

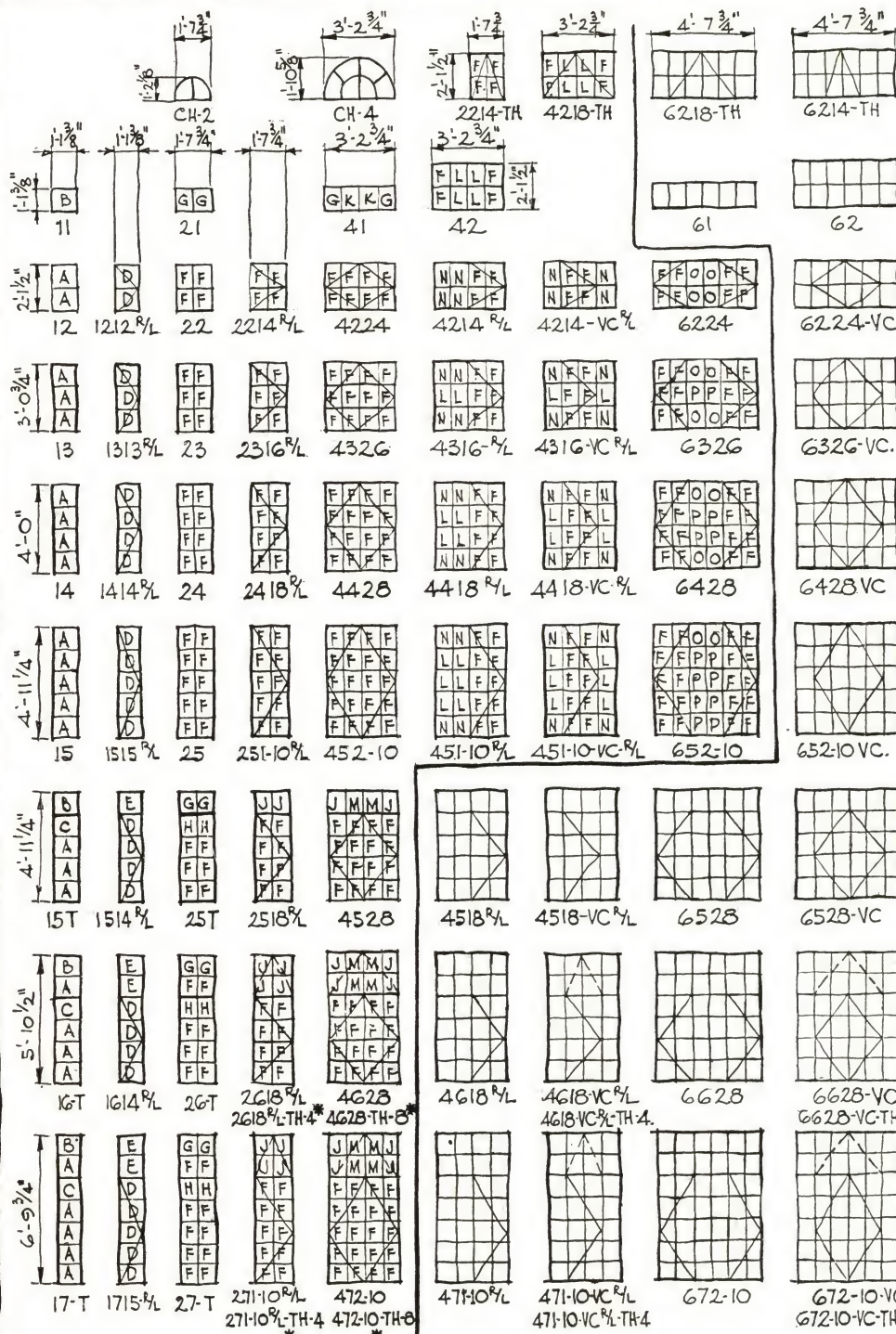


MEETING RAIL

Fenestra
1930

SCREENED FENCRAFT
FULL SIZE SECTIONS

Plate No
A-501



TYPES TO LEFT OF HEAVY
LINE ARE STANDARD

TYPES TO RIGHT OF HEAVY
LINE ARE SPECIAL TYPES

ANY TYPE FURNISHED
WITHOUT MUNTINS
WHEN SO SPECIFIED.

NOTES

SIZES GIVEN ARE OPEN-
ING SIZES AND ARE $\frac{1}{4}$ "
LARGER THAN ACTUAL WIN-
DOW DIMENSION IN BOTH
WIDTHS & HEIGHTS. IN COM-
BINING UNITS NOTHING NEED
BE ADDED FOR STEEL MULLIONS.

HANDING OF CASEMENTS
IS DETERMINED BY LOCATION
OF HINGES VIEWED FROM
THE OUTSIDE. RIGHT HAND
CASEMENTS ARE HINGED AT
RIGHT, LEFT HAND CASEMENTS
ARE HINGED AT LEFT.

R = RIGHT HAND CS'MT.

L = LEFT "

CH = CIRCULAR HEAD

TH = TOP HINGED.

VC = VENT IN CENTER

T = WITH 521 TRANSOM BAR

GLASS SIZE TABLE

Letter	SIZE OF GLASS
A	10 $\frac{1}{4}$ " x 11"
B	10 $\frac{1}{4}$ " x 10 $\frac{1}{4}$ "
C	10 $\frac{1}{4}$ " x 11 $\frac{3}{4}$ "
D	10" x 11"
E	11 $\frac{5}{8}$ " x 10 $\frac{3}{8}$ "
F	8" x 11"
G	8" x 10 $\frac{1}{4}$ "
H	8" x 11 $\frac{3}{8}$ "
J	8 $\frac{3}{8}$ " x 10 $\frac{3}{8}$ "
K	9 $\frac{1}{8}$ " x 10 $\frac{1}{4}$ "
L	9 $\frac{1}{8}$ " x 11"
M	9 $\frac{1}{8}$ " x 10 $\frac{3}{8}$ "
N	9 $\frac{1}{8}$ " x 11 $\frac{3}{8}$ "
O	8 $\frac{3}{8}$ " x 11 $\frac{3}{8}$ "
P	8 $\frac{3}{8}$ " x 11"

NOTE

TYPES SHOWING DOTTED
TRANSOM VENT MAY HAVE
EITHER FIXED OR BUILT-
IN VENT TRANSOMS.

← WITH FIXED TRANSOMS
← WITH BUILT-IN TRANSOMS

NOTE

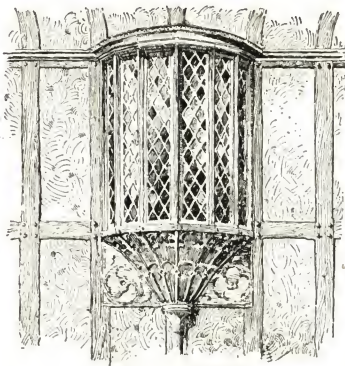
TYPES MARKED * WITH
BUILT-IN TRANSOMS ARE
SPECIAL. STD TYPES HAVE
FIXED TRANSOMS ONLY

← WITH FIXED TRANSOMS
← WITH BUILT-IN TRANSOMS

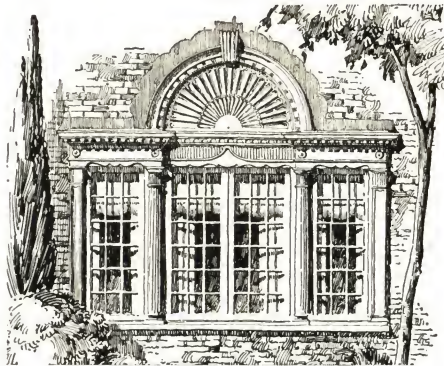
Fenestra
1931

FENCRAFT CASEMENTS
FENCRAFT & SCREEN FENCRAFT TYPES & SIZES

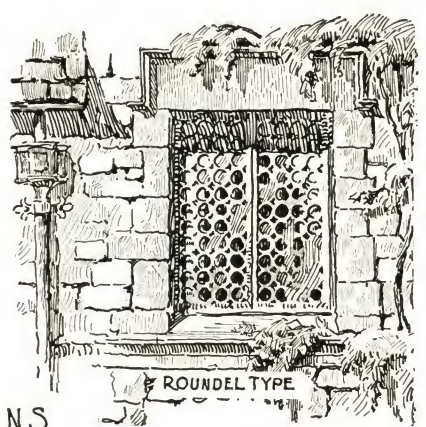
Plate No
A-515



DIAMOND TYPE

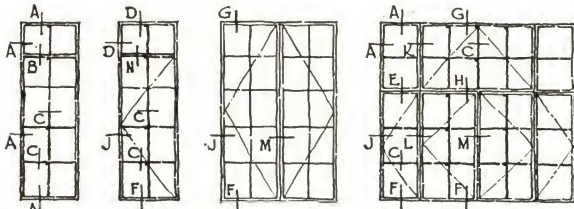


RECTANGULAR TYPE



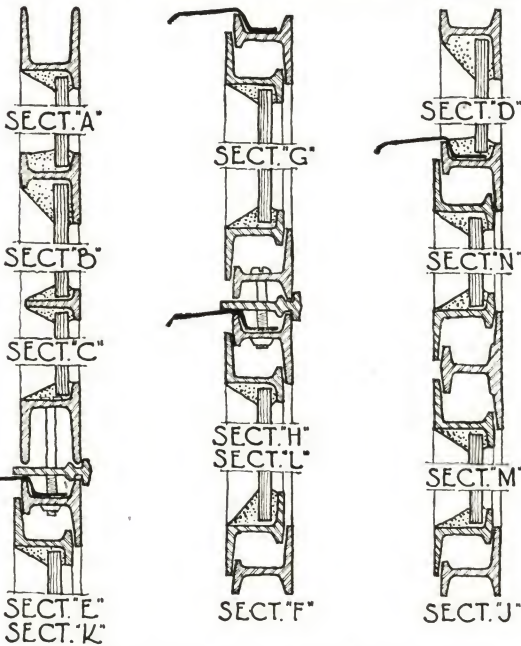
ROUNDEL TYPE

TYPICAL LEADED GLASS DESIGNS



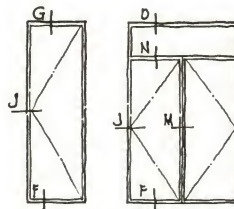
TYPICAL TYPES & COMBINATIONS WITH MUNTINS

(DRIP IS OMITTED ON SECTIONS "K" & "L")



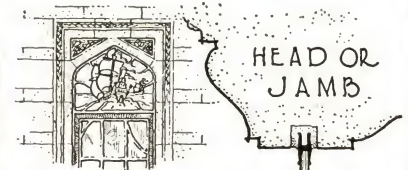
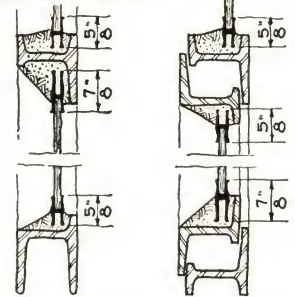
TYPICAL SECTION DETAILS

1/4 SIZE ~ FOR FULL SIZE SECTIONS SEE PL. NO. A-501



TYPICAL TYPES WITHOUT MUNTINS

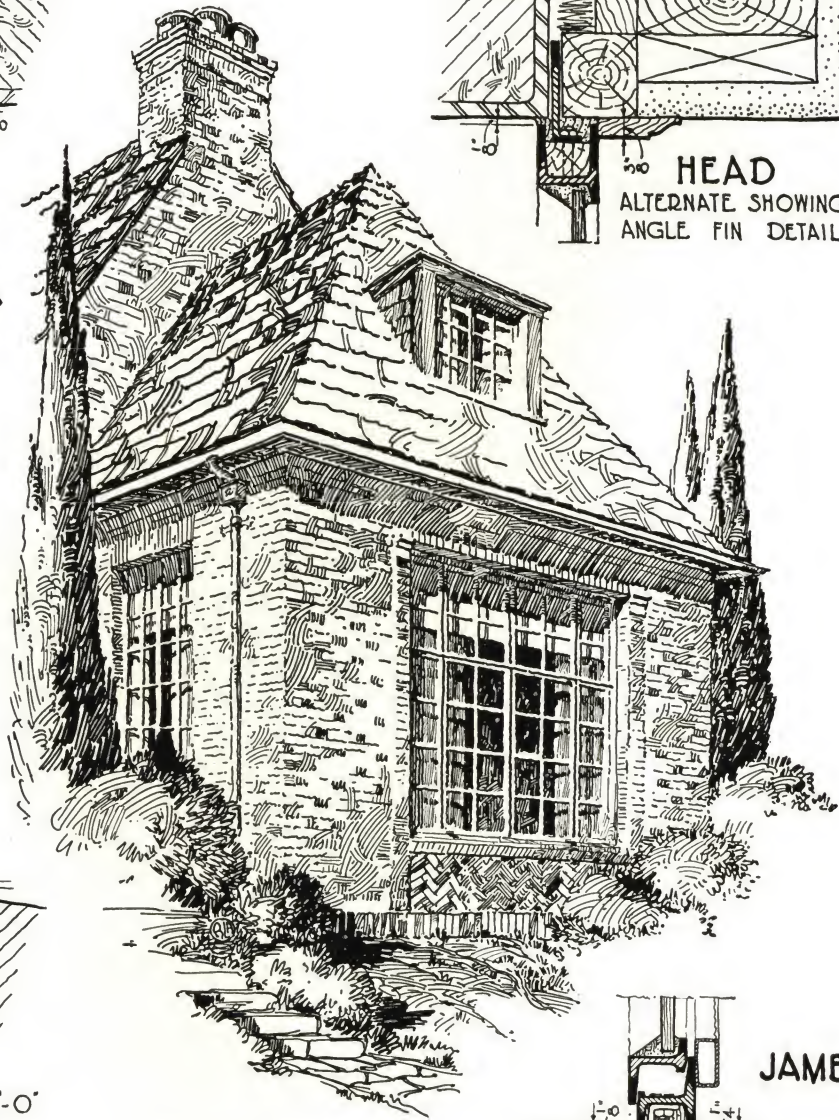
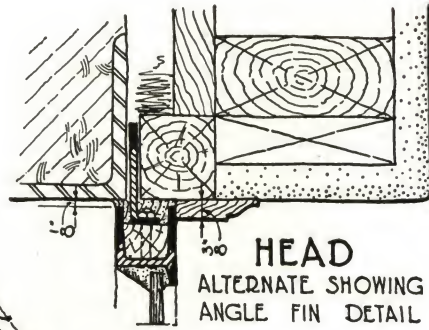
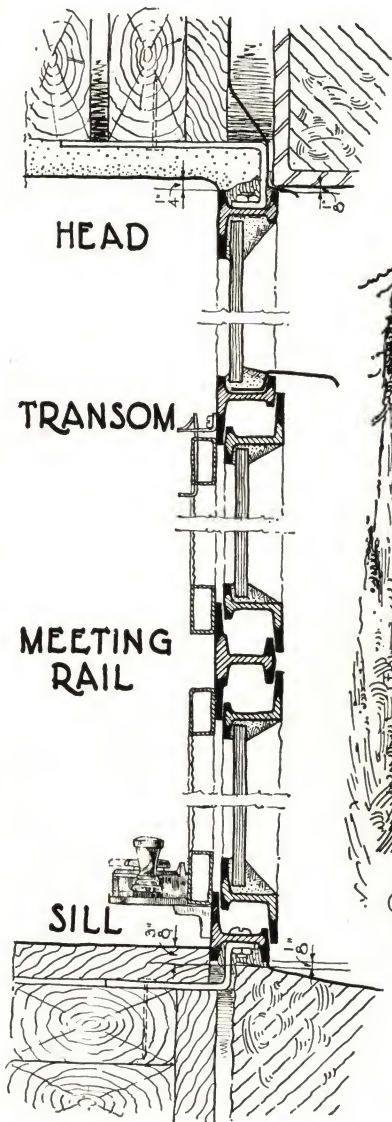
NOTES

TYPES & SIZES SHOWN ON
PLATE NO. A-515 ~ ~ ~ ~DETAILS AT LEFT SHOW SEC-
TIONS OF TYPES WITH OR WITHOUT
MUNTINS & GLAZED WITH CLEAR
GLASS. DETAILS AT RIGHT SHOW
LEADED GLAZING WITH RECOM-
MENDED WIDTHS OF CAMES. ~CLEAR OR LEADED GLASS OR
GLAZING NOT BY D.S.P. CO. ~CASEMENT WITH LEAD-
ED GLASS ABOVE SET
DIRECTLY INTO STONE.LEADED GLAZING
IN FENESTRATION SECTS.

FENCRAFT SYMMETRICAL WIDTHS

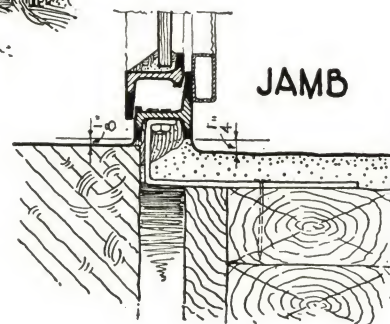
WIDTH OF OPENING	LIGHTS IN WIDTH	UNITS IN WIDTH	ARRANGEMENT OF UNITS	MULLIONS REQUIRED
1'-1 3/8"	1	1	1	0
1'-7 3/4"	2	1	2	0
3'-2 3/4"	4	1	4	0
3'-3 1/2"	4	2	2-2	1
4'-7 3/4"	6	1	6	0
4'-11 1/4"	6	3	2-2-2	2
5'-5 1/2"	6	3	1-4-1	2
6'-5 1/2"	8	2	4-4	1
6'-6 1/4"	8	3	2-4-2	2
6'-7"	8	4	2-2-2-2	3

Fenestra
1931FENCRAFT CASEMENTS
GLAZING & GENERAL DETAILSPlate No
A-516



SCALE OF DETAILS - 3" = 1'-0"

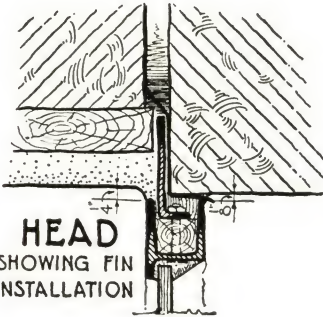
SET ALL CASEMENTS IN
MASTIC CEMENT WHERE
THEY COME IN CONTACT
WITH BUILDING WORK



Fenestra
1930

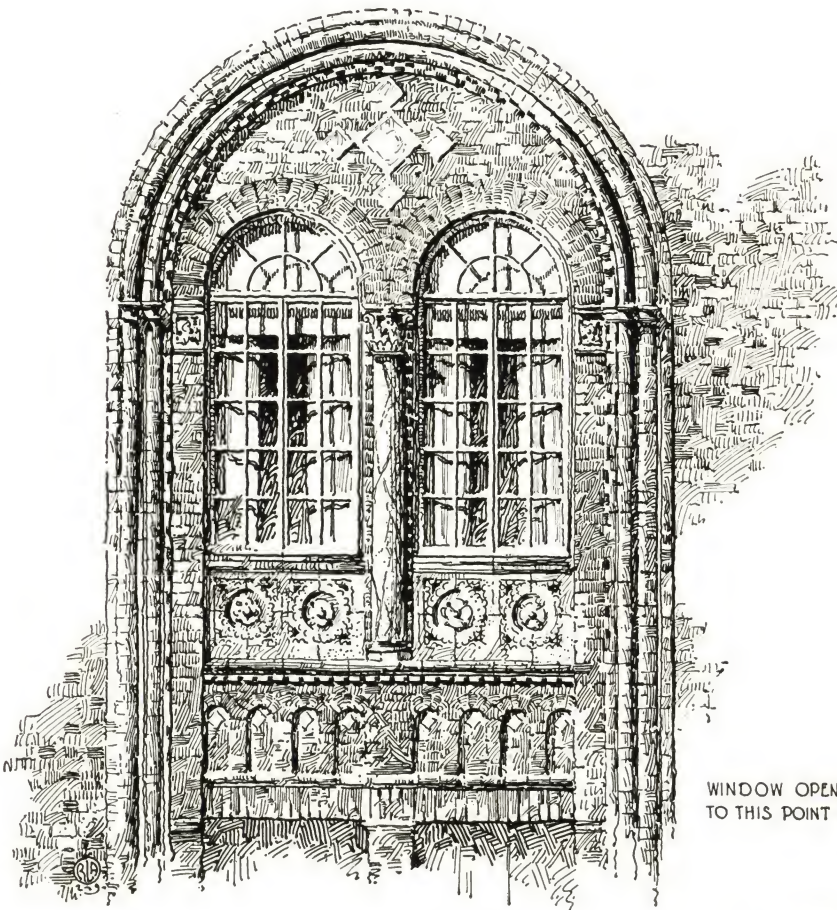
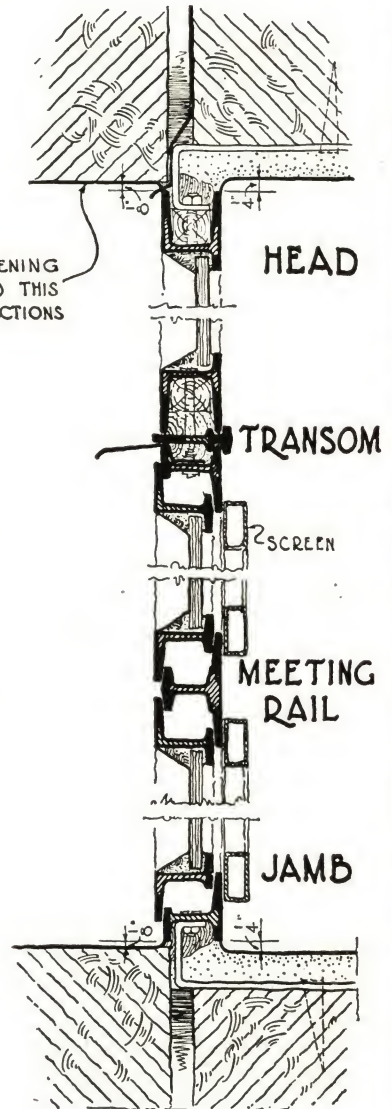
SCREENED FENCRAFT
BRICK VENEER INSTALLATION

Plate No
A 505

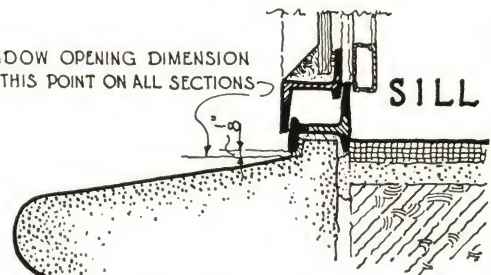


SET ALL CASEMENTS IN
MASTIC CEMENT WHERE
THEY COME IN CONTACT
WITH BUILDING WORK
AND CAULK ON OUTSIDE

WINDOW OPENING
DIMENSION TO THIS
POINT ON ALL SECTIONS



WINDOW OPENING DIMENSION
TO THIS POINT ON ALL SECTIONS

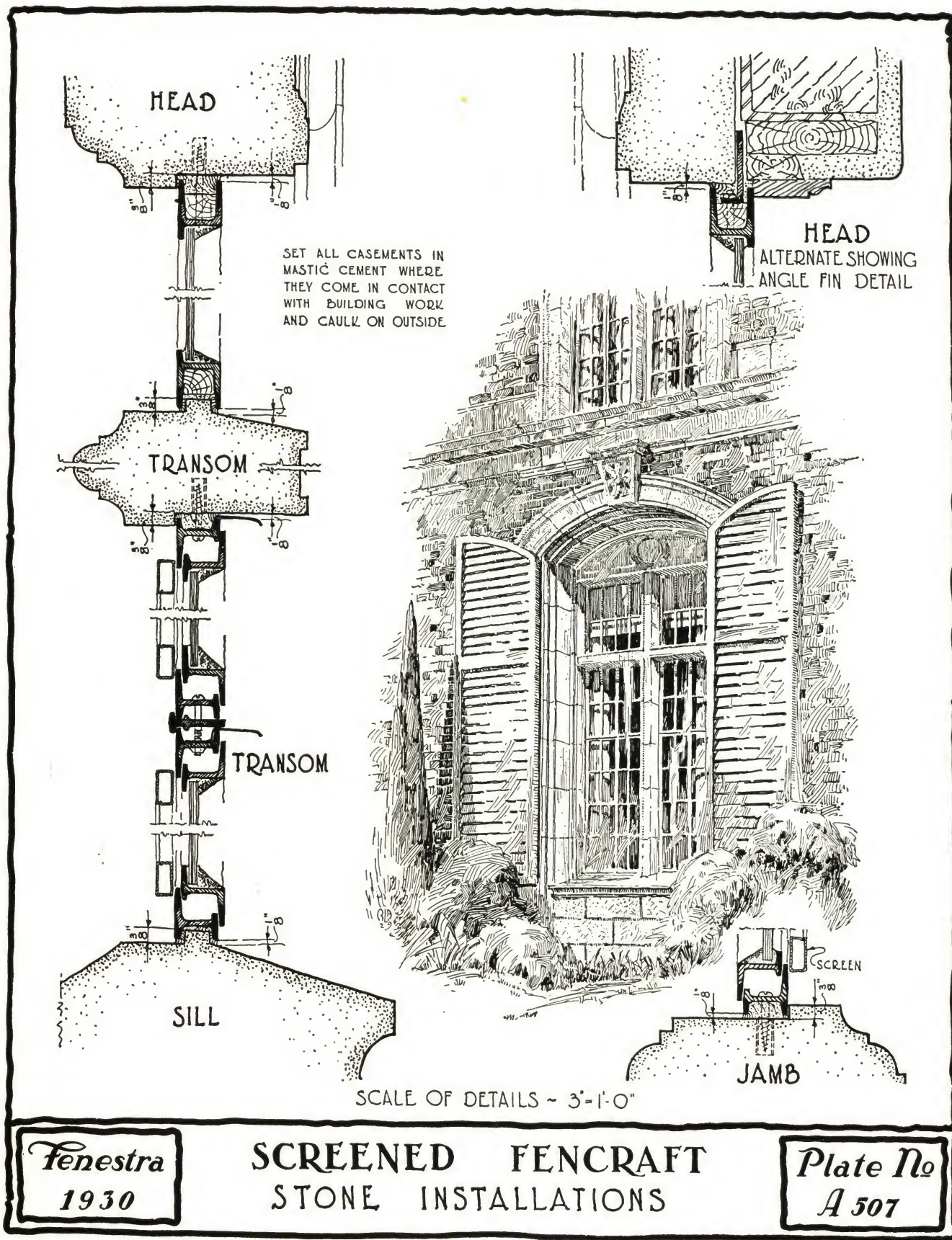


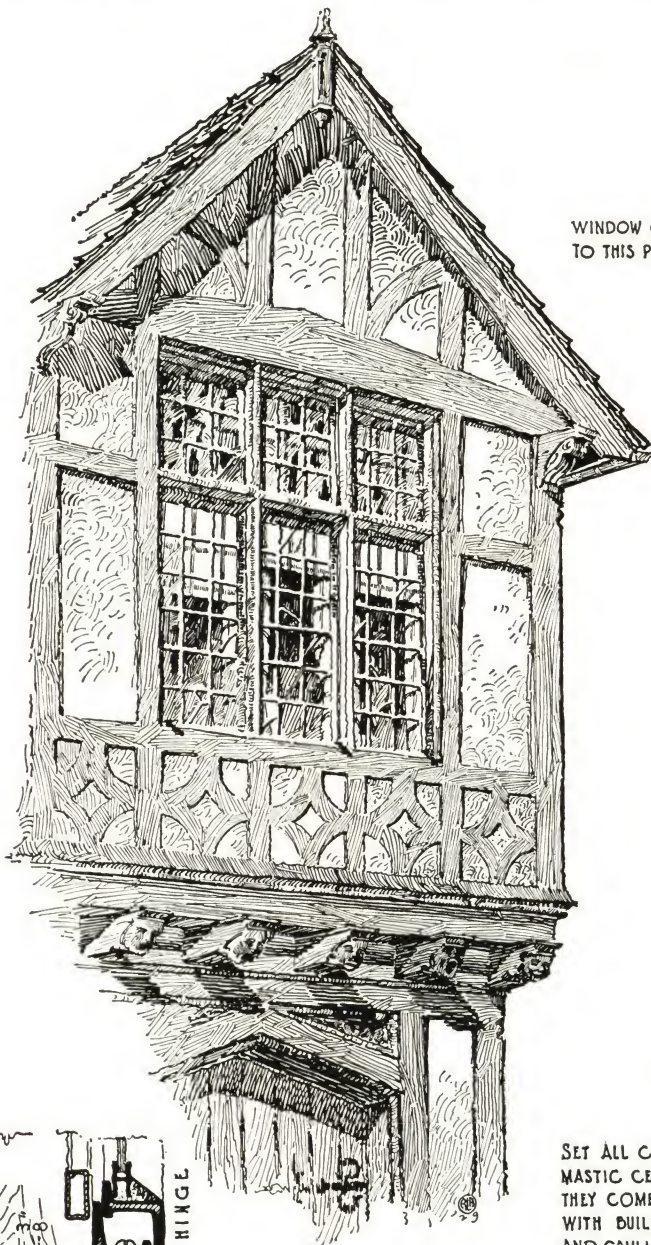
SCALE OF DETAILS - 3" = 1'-0"

Fenestra
1930

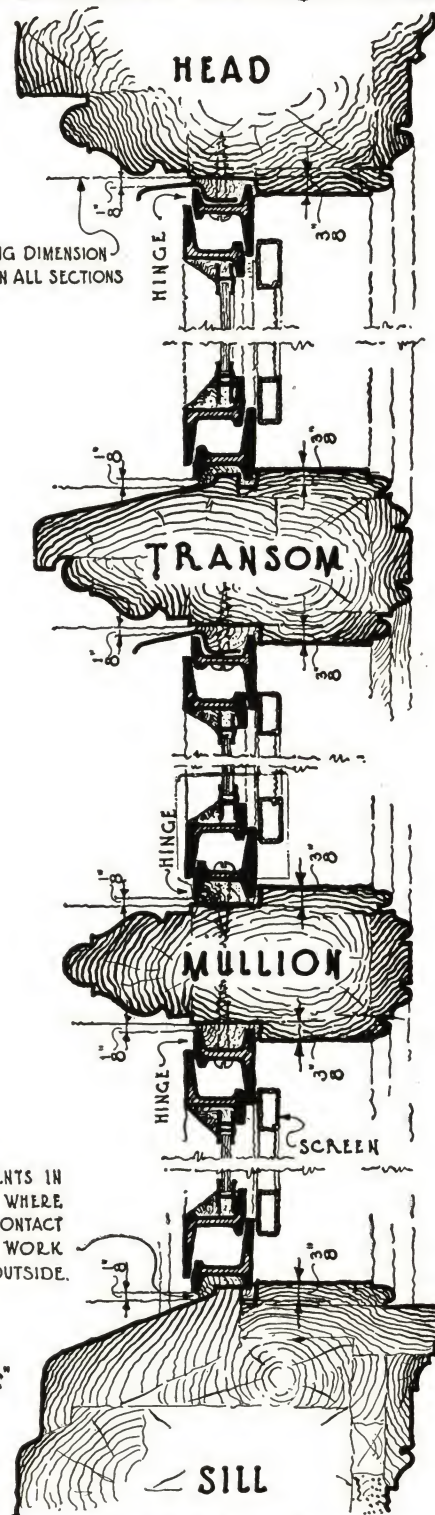
SCREENED FENCRAFT
BRICK - INSTALLATION

Plate No
A 506

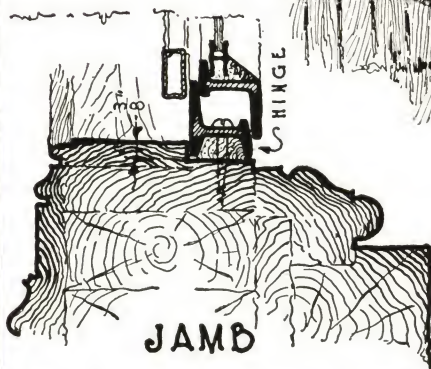




WINDOW OPENING DIMENSION
TO THIS POINT IN ALL SECTIONS



SET ALL CASEMENTS IN
MASTIC CEMENT WHERE
THEY COME IN CONTACT
WITH BUILDING WORK
AND CAULK ON OUTSIDE.

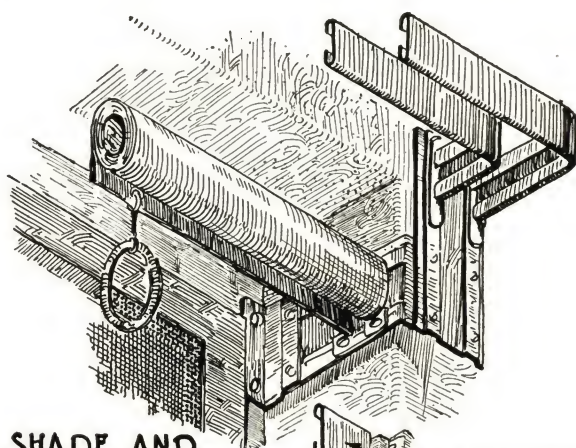


SCALE OF DETAILS 3"=1'-0"

Fenestra
1930

SCREENED FENCRAFT
WOOD INSTALLATION

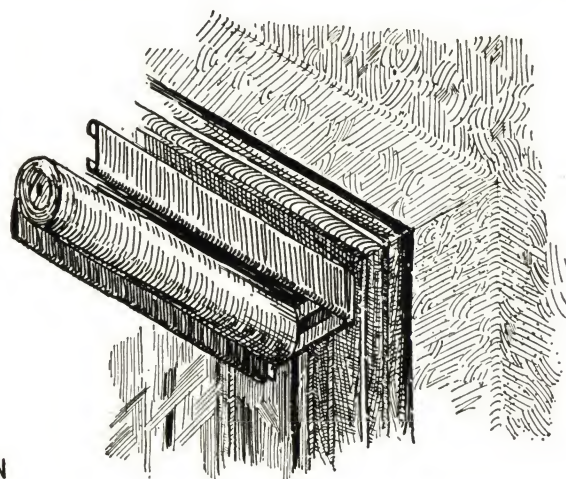
Plate No
A 508



SHADE AND
DRAPERY BRACKET
SUGGESTED
FOR OPEN OUT
SWING LEAVES



GLASS CURTAIN
ROD USED IN
PLACE OF SHADE
ROLLER.



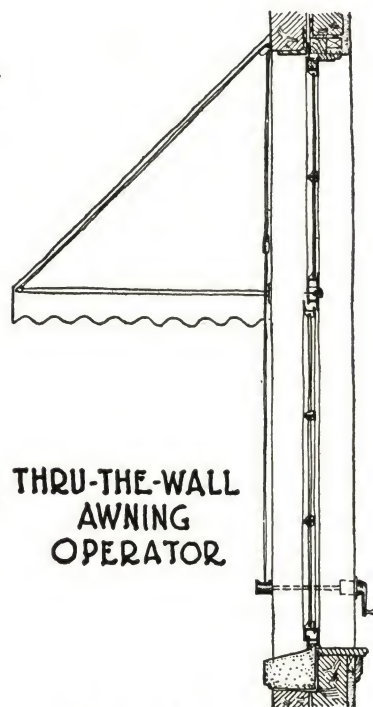
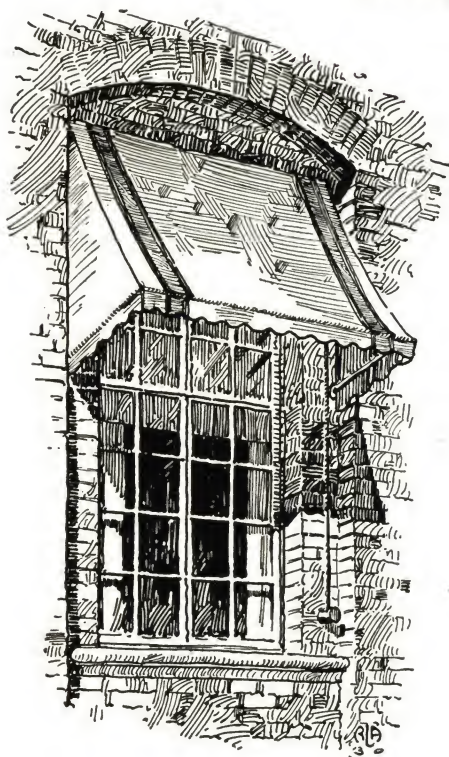
SHADE & DRAPERY BRACKET
AND SUGGESTED ATTACHMENT
TO OPEN IN SWING LEAVES.

NOTES

SCREENED CASEMENTS ARE DRILLED FOR ATTACHMENT OF SHADE & DRAPERY BRACKETS, BUT NEITHER BRACKETS NOR AWNING OPERATORS ARE FURNISHED BY DETROIT STEEL PRODUCTS COMPANY.

AT EXTRA COST OPEN IN CASEMENTS MAY BE DRILLED AND TAPPED IN THE FIELD FOR ATTACHMENT OF SHADE AND DRAPERY BRACKETS DIRECT TO THE SWING LEAVES.

LEAVE MINIMUM CLEARANCE OF 2" FROM SASH TO REVEAL IF BRACKET IS ATTACHED TO OPEN IN LEAF. SEE PLATE NO. A-303.



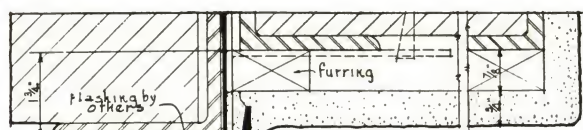
THRU-THE-WALL
AWNING
OPERATOR

VERTICAL SECTION.

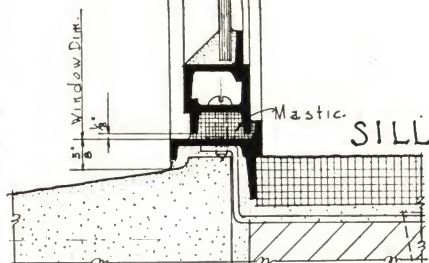
Fenestra
1930

FENESTRA CASEMENTS
DRAPING & AWNING OPERATOR SUGGESTIONS

Plate No.
A-510



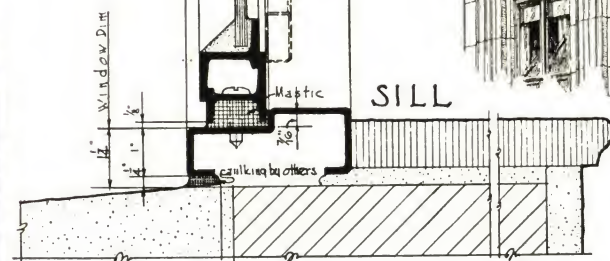
HEAD OR JAMB



ROLLED SUB-FRAME ~ OPEN OUT

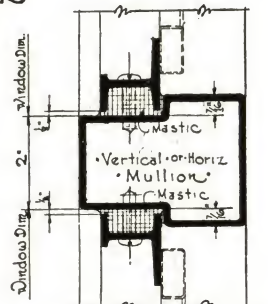


JAMB OR HEAD

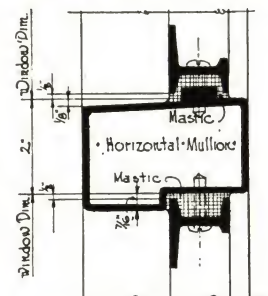


SILL

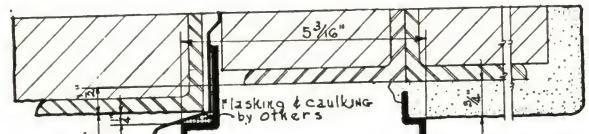
PRESSED SUB-FRAME ~ OPEN OUT



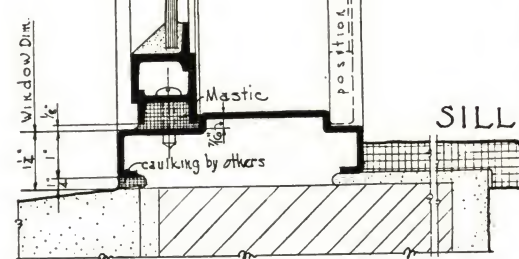
OPEN OUT MULLION



OPEN-IN MULLION

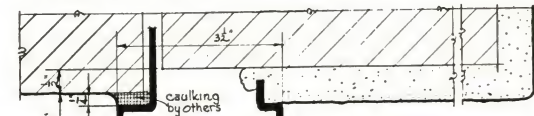


HEAD OR JAMB

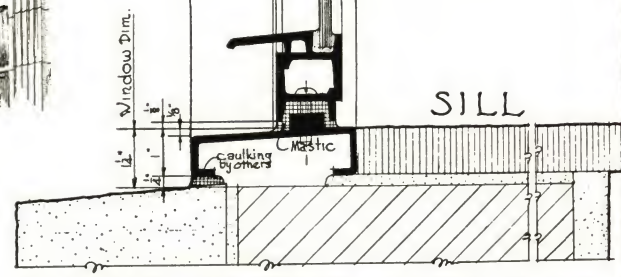


SILL

PRESSED SUB-FRAME ~ OPEN OUT



JAMB OR HEAD



SILL

PRESSED SUB-FRAME ~ OPEN IN ~ ~

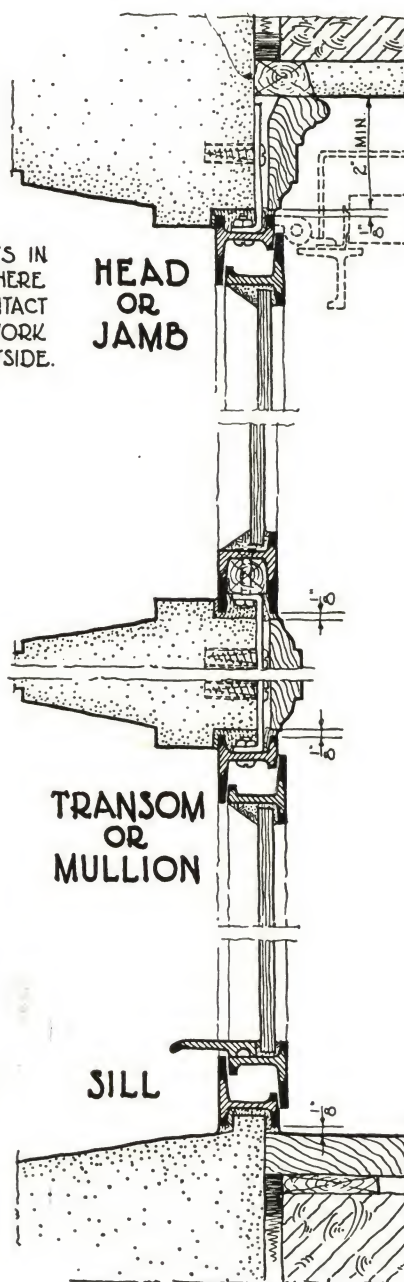
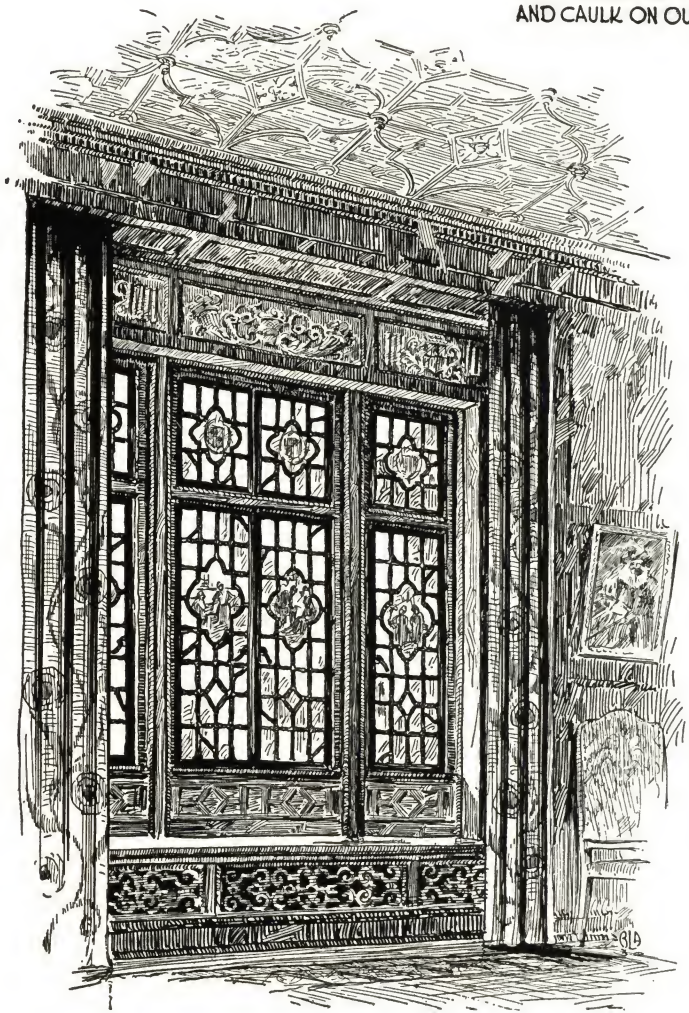
Fenestra
1931

FENCRAFT CASEMENTS HEAVY STEEL SUB-FRAME INSTALLATIONS

Plate No
A-410

A MINIMUM DIMENSION OF 2" FROM SASH TO REVEAL AT JAMB IS REQUIRED FOR CLEARANCE WHEN SHADE AND DRAPERY BRACKET IS ATTACHED TO SWING LEAF. SEE DETAIL AT RIGHT.

SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK AND CAULK ON OUTSIDE.

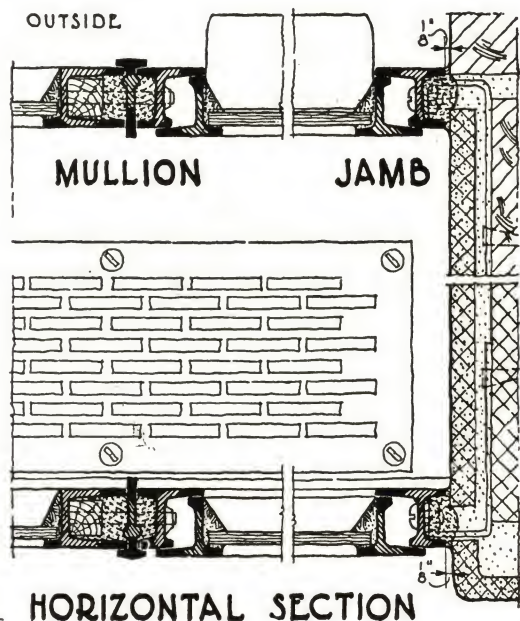
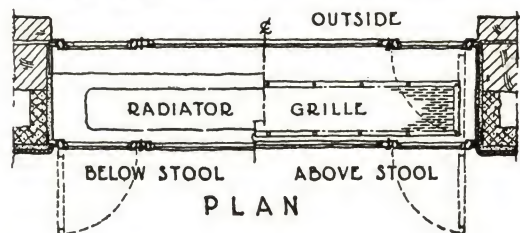
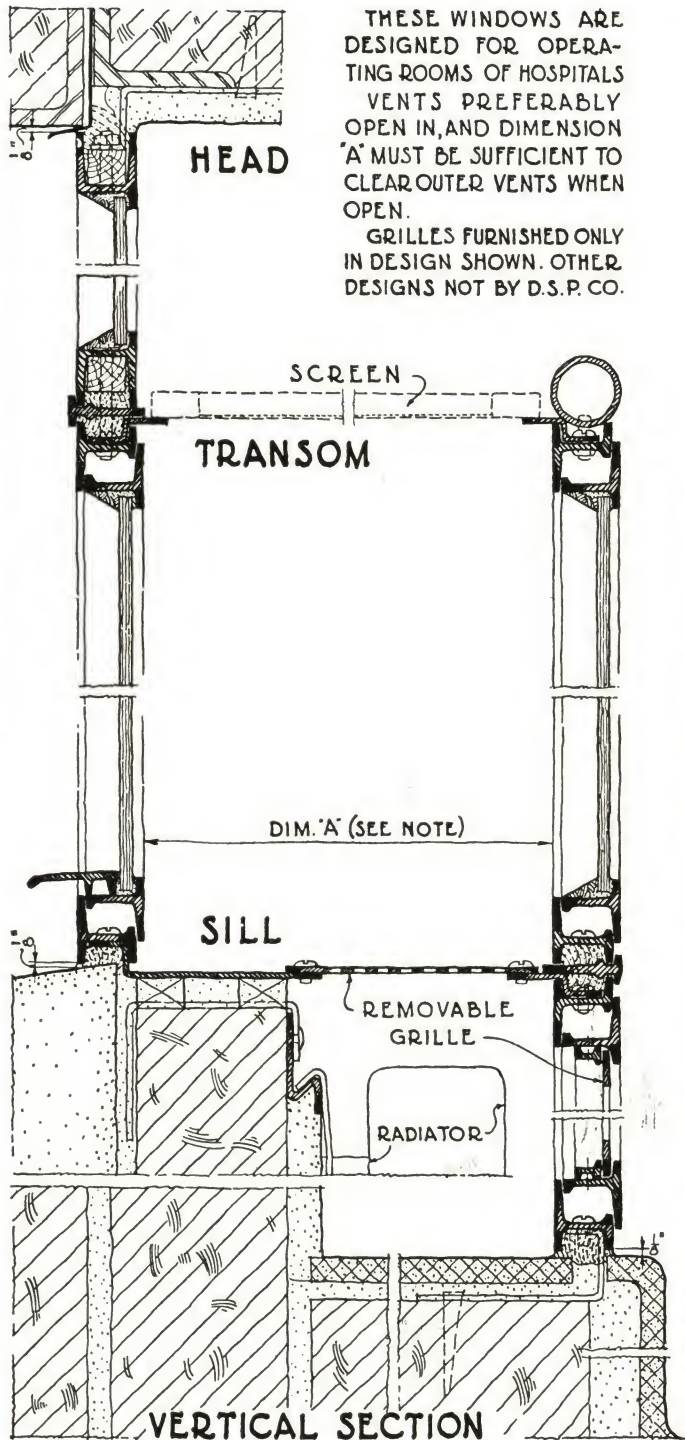


SCALE OF DETAILS - 3"=1'-0"

Fenestra
1930

FENCRAFT OPEN IN
TYPICAL INSTALLATION

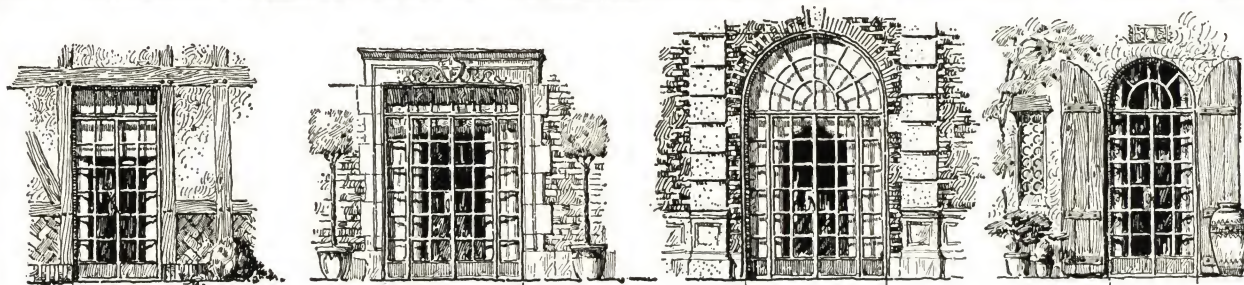
Plate No
A-303



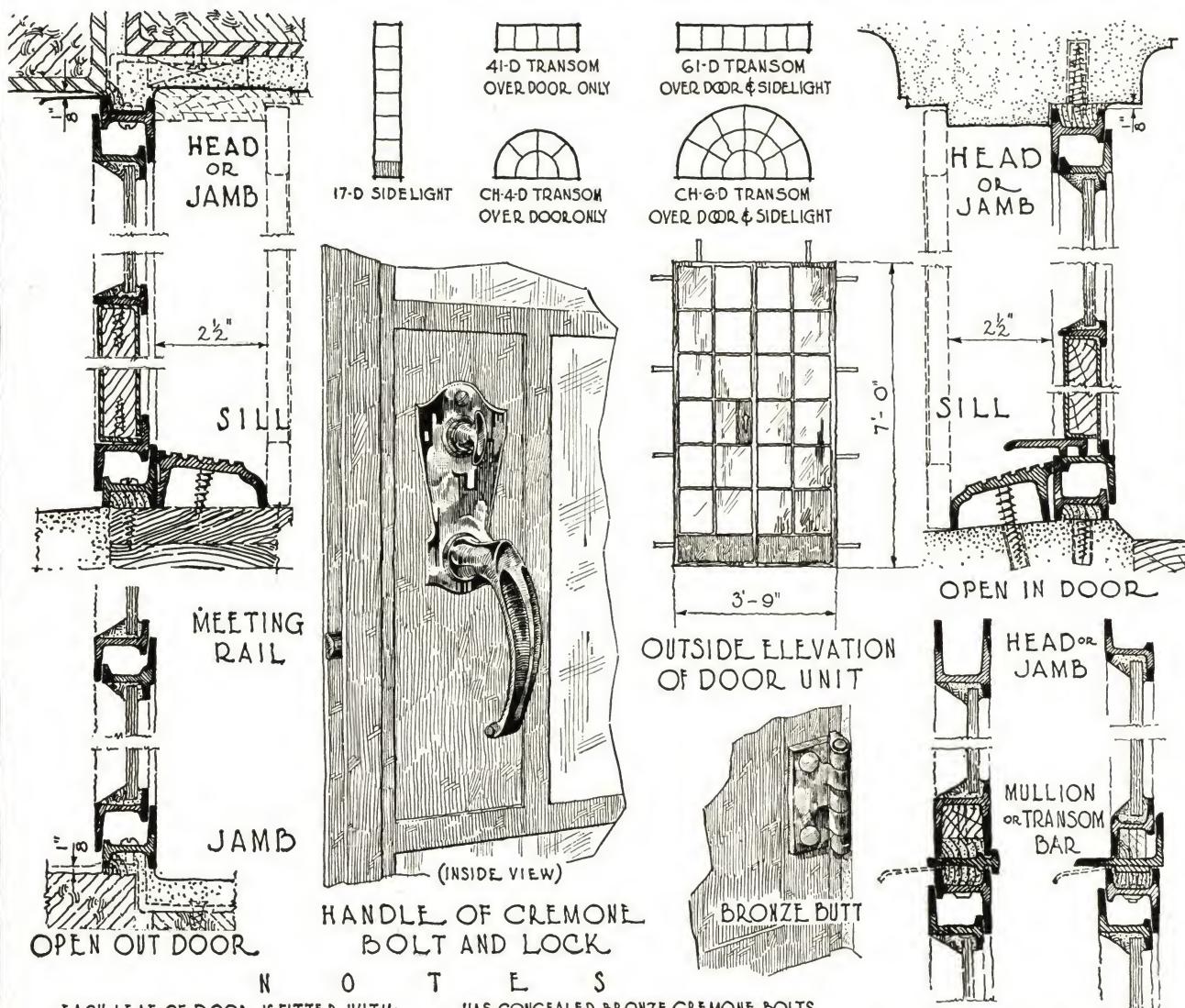
Fenestra
1930

FENCRAFT OPEN IN
OPERATING ROOM INSTALLATION.

Plate No
A-304



TYPICAL COMBINATIONS WITH SIDELIGHTS & TRANSOMS



EACH LEAF OF DOOR IS FITTED WITH THREE BRONZE BUTTS
RIGHT HAND LEAF HAS CONCEALED BRONZE SHOT BOLTS, LEFT HAND LEAF

HAS CONCEALED BRONZE CREMONE BOLTS WITH BRONZE HANDLES & MAY HAVE THUMB LATCH (INSIDE), CYLINDER, OUTSIDE & THUMB LATCH INSIDE, OR CYLINDERS BOTH SIDES AS SPECIFIED.

DOOR COMBINED WITH FENCRAFT SIDELIGHT OR TRANS.
DOOR COMBINED WITH FENWROUGHT SIDELIGHT OR TRANS.

Fenestra
1931

FENESTRA CASEMENT DOOR
WITH FENCRAFT & FENWROUGHT SIDELIGHTS

Plate No
B-301

SCREENED "FENWROUGHT" CASEMENTS

SPECIFICATIONS

1 GENERAL

- 1a ALL windows shall be Fenestra Screened "Fenwrought" as manufactured by Detroit Steel Products Company.

2 MATERIAL AND WORKMANSHIP

- 2a FRAME sections shall have a minimum depth of 1" from front to back. Frames and swing leaves shall be hot rolled, solid steel, providing continuous, two-point, flat weathering contact between swing leaves and frame and shall be further weathered by baffles at both inner and outer contacts.
- 2b FRAMES and swing leaves shall be mitered at all corners and electrically butt welded. Welds shall be ground to a smooth finish.

(Mullions or transom bars are provided between adjacent units as specified.)

(Heavy, electro-galvanized steel drip is supplied over all swing leaves, coming to the head of the window.)

(Sill and jamb anchor clips with bolts for attachment to frame are supplied where required.)

3 ATTACHED HARDWARE

- 3a ALL side hung swing leaves shall open out on heavy extension (cleaning) hinges of special, solid rolled steel with heavy re-entrant angle fillets. Hinge pins shall be solid bronze accurately fitted into flanged bronze bushings.
- 3b ALL top hung open-out transoms shall be hung on heavy, flush, sherardized, wrought steel hinges with bronze hinge pins.
- 3c PROVIDE a locking handle bracket of heavy gauge steel plate stamped to special design and solidly attached to the frame section.
- (On units with one swing leaf, the bracket is welded to the frame section. Specify whether leaf is desired left or right handed. Where window contains two swing leaves, the bracket is screwed to the vertical meeting rail.)*

- 3d PROVIDE a specially rolled steel keeper welded to each swing leaf stile.

4 DETACHED HARDWARE

- 4a ALL locking handles shall be of ornamental design and shall be (1) malleable iron with dull black finish, or (2) solid bronze, coinage finish.
- (Handle 1023.)*
- 4b ALL handles shall be designed with a hinge action to permit their slipping through the screen escutcheon.
- 4c AN adjuster shall be provided at the sill of each casement so that the swing leaves may be opened and closed through the screen, but without touching it. Each adjuster shall consist of a solid bronze arm with fulcrum bracket and locking lever, coinage finish or oxidized.

(Through Screen Operator 1133.)

- 4d ADJUSTERS for top hung, open-out transoms shall be of the notched stay type designed to operate through the screen, but without touching it. Furnished in coinage or oxidized finish.

(Transom Stay 1108.)

5 PAINTING

- 5a ALL casements shall receive one dip coat of gray lead and oil paint by the manufacturer before shipment.

(Provide for additional coat of paint by the painting contractor after erection of windows and before glazing. Final painting should be deferred until three weeks after glazing to permit putty to set. Where desired, Fenestra Construction Co. will do field painting under a separate contract.)

6 ERECTION

- 6a ALL casements shall be set plumb and true and caulked with mastic to form a weather-tight union between window frames and mullions, transom bars or building construction. All hardware shall be applied in accordance with manufacturer's instructions.

(Mastic is supplied—1 lb. to each 10 lineal feet of perimeter.) Include in the masonry specifications that all masonry openings shall be constructed in accordance with Fenestra installation details so that windows may be installed after the masonry is completed. Also, include that all mortar grouting and pointing shall be done by the mason contractor after the windows have been installed.)

7 GLASS AND GLAZING

- 7a ALL glass shall be bed puttied and face puttied and further secured by copper plated, spring glazing clips furnished by the window manufacturer.

(Putty should be high grade, quick setting, steel window putty. Ordinary wood sash putty cannot be used. Glass should be 1/8" or 1/4" plate. Double strength recommended for small lights only. Single strength not recommended. Glass and glazing labor is supplied by the Fenestra Construction Co. under a separate contract, if desired.)

8 SHADING

(Each casement is drilled at both jambs near the head for the attachment of standard shade and drapery brackets which can be purchased from local interior decorators.)

9 SCREENS

- 9a FENESTRA Flat Screens: Screens shall be set flat against the inside of the casement frame with locking handles and adjusters extending through the screens so that casements may be opened, closed and locked without touching screens.

SCREEN frames shall be cold rolled, rust proofed steel containing a triangular reinforcing brace running the full length of the stile and shall be painted two coats of gray lead and oil baked on. Screen cloth shall be 16-mesh oxidized bronze wire held taut by a cap removable for rewiring. Each screen to

have a 22-gauge steel escutcheon to fit over and around the locking handle.

(Screens with bronze frame or finer mesh may be had at extra cost.)

10 FRENCH DOORS

(For use with "Fenwrought" and "Screened Fenwrought" Casements, Fenestra French Doors of similar design, quality and workmanship can be supplied in standard sizes, where specified. Shop drawings are submitted for the architect's approval before fabricating. See Plate B-301.)

(By the use of mullions, doors may be combined with side lights and transoms to fill door openings of various sizes.)

(Doors can be made to open in or out. Open-out doors have a heavy electro-galvanized drip at the head. Open-in doors have a heavy, non-corrosive, extruded drip at the sill. All doors have a double kick plate in the lower panel with wood inserted between 16-gauge steel sheets as a sound deadener. All doors have bronze hinges and pins. Extruded bronze thresholds may be had at extra cost.)

(The active leaf of each door is equipped with a solid bronze locking handle operating a concealed bronze cromone bolt which actuates three locking bolts. Shot bolts are provided on the opposite leaf. A dead lock is provided to lock the doors from the inside. All doors are glazed from the outside.)

(Screens for French doors are not supplied by Detroit Steel Products Co.)

FENESTRA "FENWROUGHT" CASEMENTS

SPECIFICATIONS

1 GENERAL

- 1a ALL windows shall be Fenestra "Fenwrought" as manufactured by Detroit Steel Products Co.

2 MATERIAL AND WORKMANSHIP

(Same as "Screened Fenwrought" 2a, 2b.)

3 ATTACHED HARDWARE

- 3a ALL side hung swing leaves shall open out on two heavy, friction, cleaning hinges of solid rolled, sherardized steel with heavy re-entrant angle fillets. Each hinge shall be equipped with two friction washers. Washers and hinge members shall be held by lock washers and bronze studs with acorn nuts so that by adjusting the nuts, the friction may be increased or decreased.

- 3b ALL top hung open-out transoms shall be hung on heavy, flush, sherardized, wrought steel hinges with bronze hinge pins.

- 3c PROVIDE ornamental locking handle brackets of special, solid rolled steel sections, welded to the swing leaf stiles.

- 3b BRASS strikes and wrought steel keepers shall be supplied, attached to the window frame as required.

4 DETACHED HARDWARE

- 4a ALL locking handles shall be ornamental in design and shall be (1) Specification Bronze, Coinage Finish, (2) Solid Bronze Oxidized, (3) Iron with dull black finish.

(Handles 198 or 699.)

- 4b WHERE friction hinges are used, no sill operating hardware is necessary. Where non-friction hinges are used operators shall be: (1) Sliding Stay; (2) Peg and Stay; (3) Friction Stay; (4) Gear Type Underscreen.

(Sliding Stay 612; Peg and Stay 209; Friction Stay 203; Underscreen 385.)

- 4c FOR top hung transoms, provide Peg and Stay operator in wrought iron with dull black finish or in solid bronze, at extra cost.

(Transom Stays 747 or 1034.)

5 PAINTING

(Same as "Screened Fenwrought" 5.)

6 ERECTION

(Same as "Screened Fenwrought" 6.)

7 GLASS AND GLAZING

(Same as "Screened Fenwrought" 7.)

8 SHADING

(Shade and drapery brackets should be attached to the building construction, $2\frac{1}{2}$ " back from the face of the window to clear the hardware.)

9 SCREENS

- 9a SCREENS shall be: (1) Fenestra Swing Screens; (2) Fenestra Chamberlin Roll Screens.

(Fenestra Swing Screens are of cold rolled steel, welded into tubes, mitered at the corners and butt welded. The entire screen is bonderized after assembly and painted with gray enamel, baked on. Screen cloth is 16-mesh oxidized bronze wire. All fittings are brass except pivot brackets which are parkerized steel.)

(All screens set flat against the inside of the casement frame and saving on brass studs at top and bottom. Easily removed. Rewireable if desired.)

(Fenestra Chamberlin Roll Screens consist of 16-mesh, antique finish, bronze wire cloth carried on a spring roller of steel tubing, the whole encased in an electro-plated, steel case. This case is attached at the head of the window or the head of the swing leaf, the screen cloth unrolling downward, guided by electro-plated steel guides, attached to the jambs.)

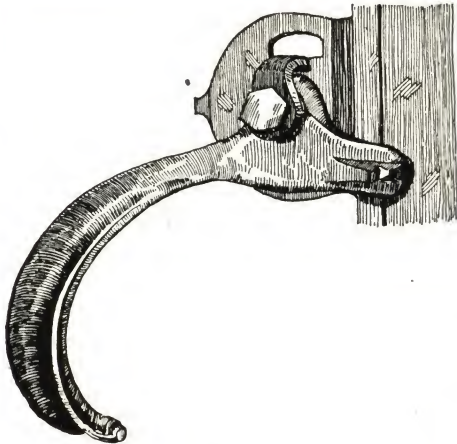
(When pulled down to the sill, the screen locks automatically in position. In opening, light pressure on the locks on either side releases the screen which is immediately wound up on the spring roller.)

(Guides, roll case, operating bar and all exposed parts are oxidized copper color and laquered. Screens are rewirable when necessary.)

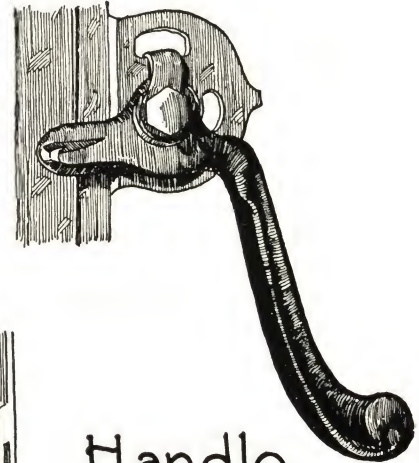
(Screens with finer than 16-mesh cloth may be had at extra cost.)

10 FRENCH DOORS

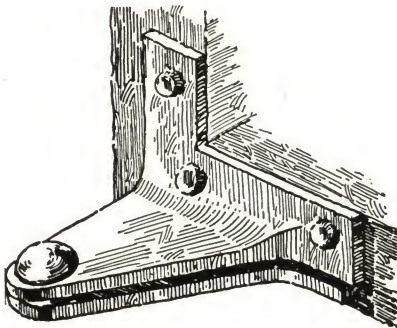
(Same as "Screened Fenwrought" 10.)



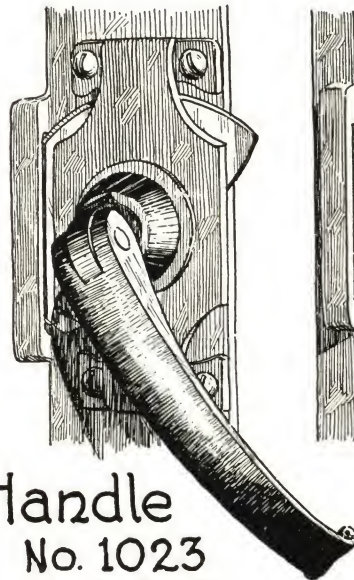
Handle
No. 699 for C



Handle
No. 198 for A & B



EXTENSION BUTT



Handle
No. 1023
for A, B & C

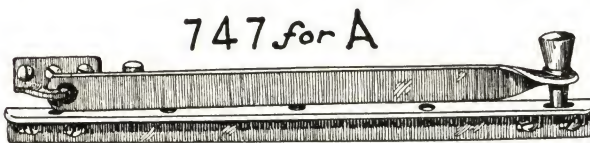
— F —
SERIES-C = SPEC-
IFICATION BRONZE
COINAGE FINISH

SERIES-B = OXID-
IZED FINISH ~ ~

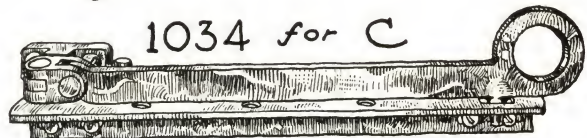
SERIES-A = DULL
BLACK FINISH

— F —

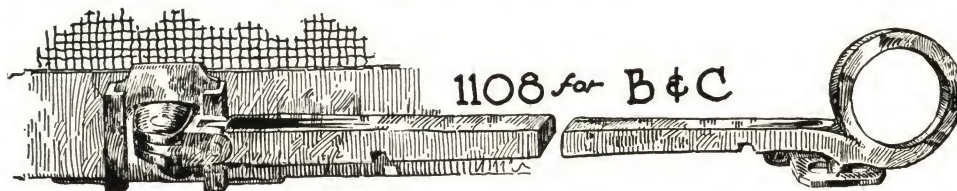
Transom Stays



747 for A



1034 for C



1108 for B & C

Fenestra
1931

FENWROUGHT CASEMENTS
HARDWARE

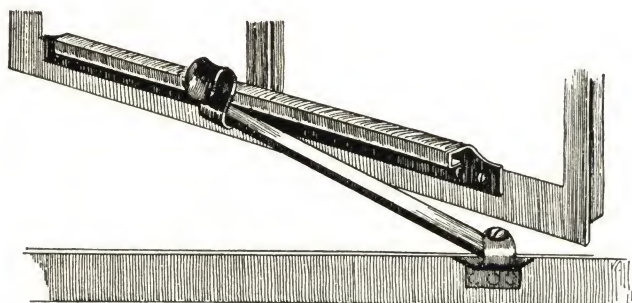
Plate No
A-211



End of Operator 1133 for B



Thru-Screen Operator 1133 for C



Sliding Stay No. 612 for A & B

— F —
 SERIES-C = SPECIFI-
 CATION BRONZE ~
 COINAGE FINISH ~

SERIES-B = OXID-
 IZED FINISH ~ ~

SERIES-A = DULL
 BLACK FINISH ~

— F —



Peg-Stay No. 209 for A



Friction Stay No. 203 for B & C

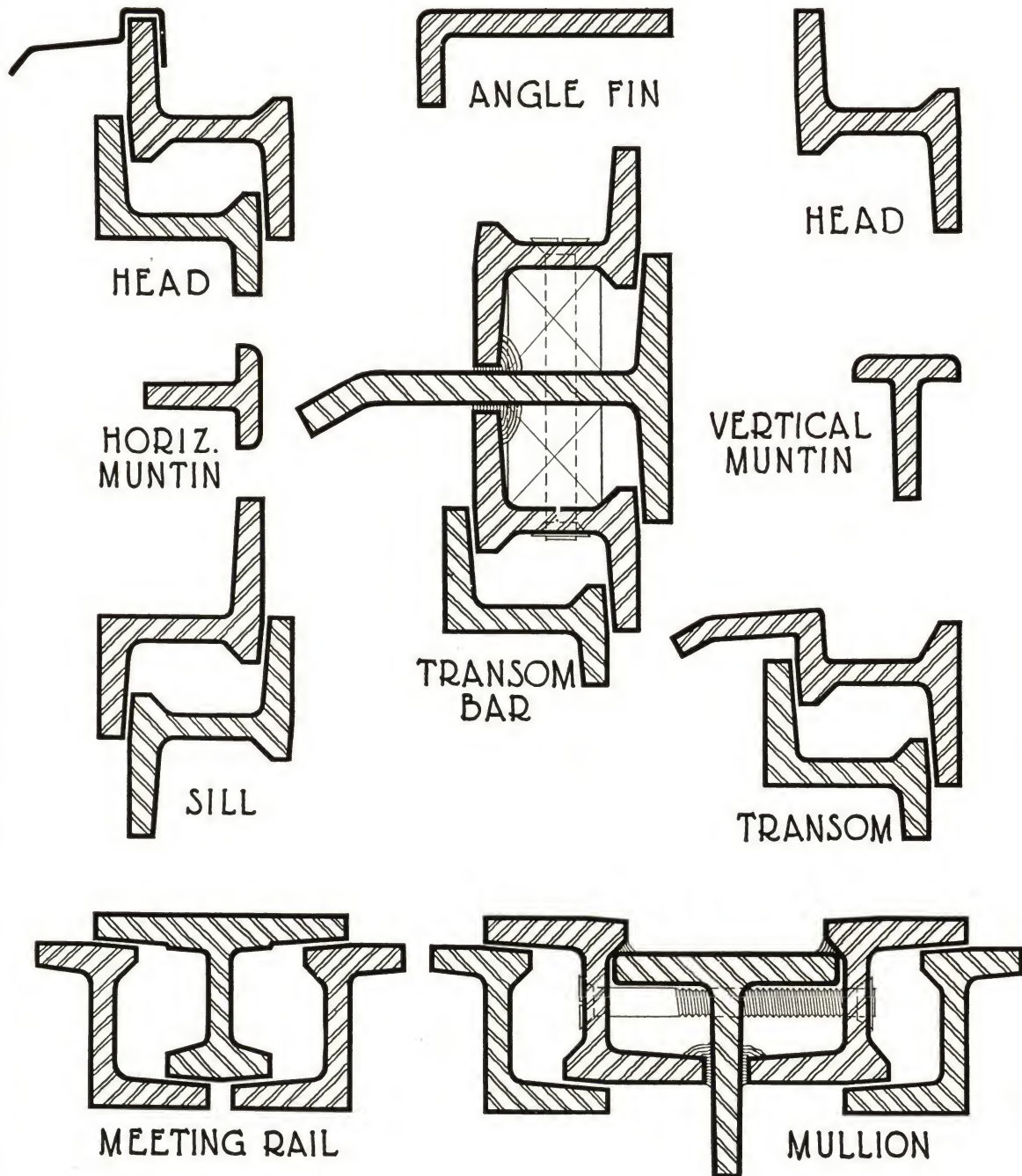


Underscreen Operator
 No. 385 for A & B

Fenestra
 1931

FENWROUGHT CASEMENTS
 HARDWARE

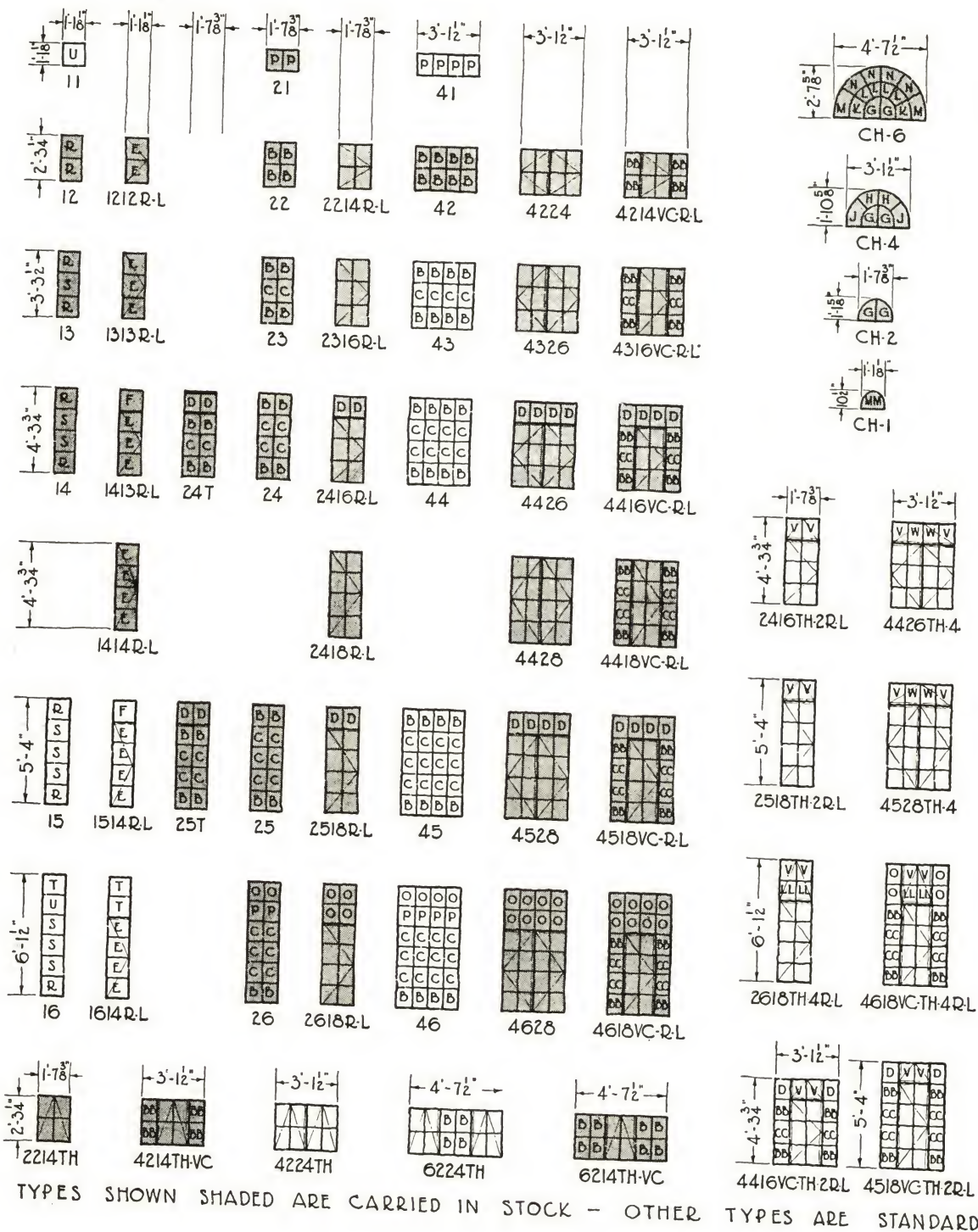
Plate No
 A ~ 212



Fenestra
1930

SCREENED FENWROUGHT
FULL SIZE SECTIONS

Plate No
A-202



Fenestra
1930

SCREENED FENWROUGHT TYPES AND SIZES

Plate No
A-203

GLASS SIZES CUT FROM

A	8" x 12"	STOCKED
B	8 $\frac{1}{8}$ " x 12 $\frac{3}{8}$ "	STOCKED
C	8 $\frac{1}{8}$ " x 12"	STOCKED
D	8 $\frac{1}{8}$ " x 11 $\frac{3}{4}$ "	STOCKED
E	10" x 12"	R
F	11 $\frac{3}{8}$ " x 11 $\frac{3}{4}$ "	R
G	TEMPLATE	C
H	TEMPLATE	M
J	TEMPLATE	M
K	TEMPLATE	R
L	TEMPLATE	D
M	11 $\frac{1}{4}$ " x 16 $\frac{1}{2}$ "	STOCKED
N	TEMPLATE	M
O	8 $\frac{1}{8}$ " x 10 $\frac{1}{2}$ "	D
P	8 $\frac{1}{8}$ " x 11 $\frac{3}{8}$ "	D
R	11 $\frac{3}{8}$ " x 12 $\frac{3}{8}$ "	STOCKED
S	11 $\frac{3}{8}$ " x 12"	R
T	11 $\frac{3}{8}$ " x 10 $\frac{1}{2}$ "	R
U	11 $\frac{3}{8}$ " x 11 $\frac{3}{8}$ "	R
V	8" x 10"	A
W	8 $\frac{1}{8}$ " x 10"	D
BB	8 $\frac{3}{8}$ " x 12 $\frac{3}{8}$ "	STOCKED
CC	8 $\frac{3}{8}$ " x 12"	STOCKED
LL	8" x 9 $\frac{1}{8}$ "	A
MM	TEMPLATE	D

LIGHTS IN VENTILATORS
(NOT LETTERED) ARE "A"
SIZE 8" x 12" GLASS.

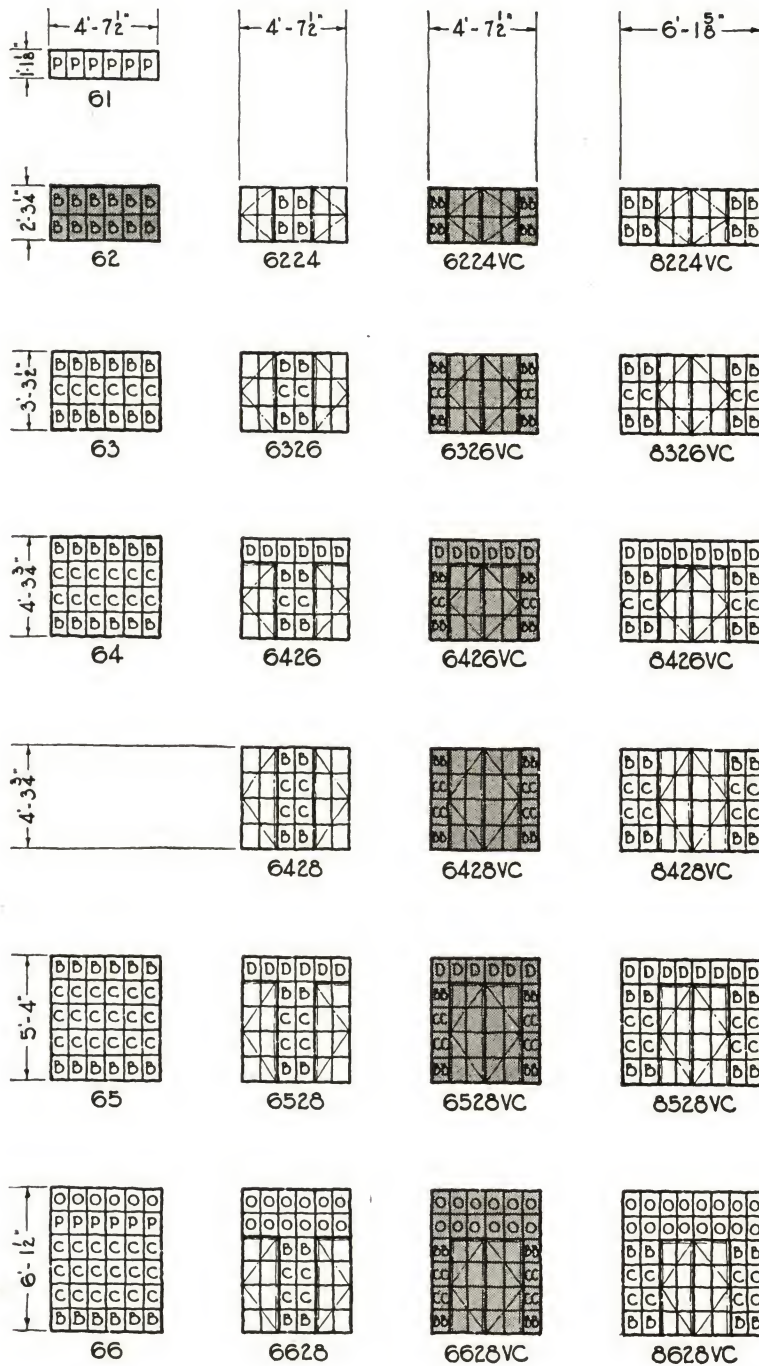
NOTES

VC - VENTILATOR IN CENTER
TH - TOP HINGED TRANSOM

SIZES GIVEN ARE WINDOW
DIMENSIONS. $\frac{1}{8}$ " SHOULD BE
ALLOWED FOR CLEARANCE
ON ALL SIDES

HANDING OF CASEMENTS IS
DETERMINED BY LOCATION OF
HINGE. VIEWED FROM OUTSIDE
RIGHT HAND CASEMENTS ARE
HINGED AT RIGHT AND LEFT
HAND CASEMENTS ARE HINGED
AT LEFT.

TYPES SHOWN SHADED ARE
CARRIED IN STOCK. OTHER
TYPES ARE STANDARD.



Fenestra
1930

SCREENED FENWROUGHT
TYPES AND SIZES

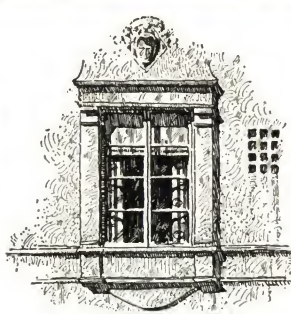
Plate No
A-204



DIAMOND TYPE



RECTANGULAR TYPE

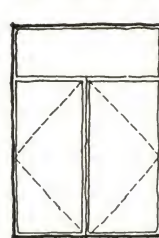
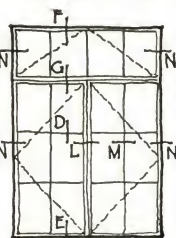
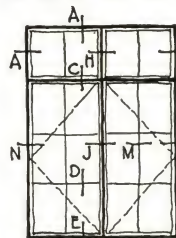
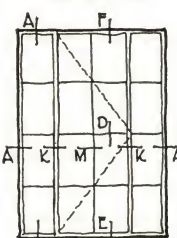
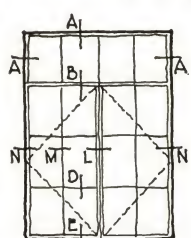


SPANISH TYPE



NORMAN TYPE

TYPICAL LEADED GLASS DESIGNS



TYPICAL ELEVATIONS

TYPICAL TYPE
WITHOUT MUNTINS

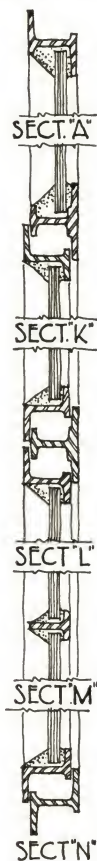
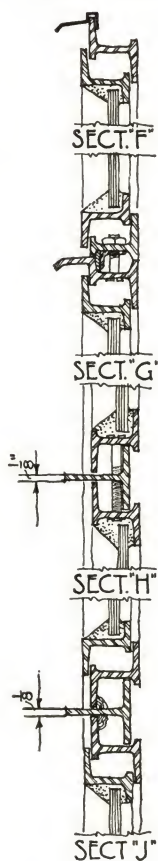
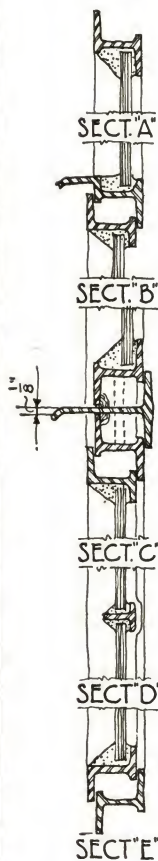
NOTES

ANY FENWROUGHT TYPE WILL BE FURNISHED WITH INTERIOR MUNTINS OMITTED WHEN SO SPECIFIED.

LEADED GLASS DESIGNS SHOWN ARE ONLY SUGGESTIONS - D.S.P. CO. DOES NOT FURNISH EITHER CLEAR OR LEADED GLASS NOR DO ANY GLAZING.

DETAILS AT LEFT SHOW STD. SECTIONS OF TYPES GLAZED WITH CLEAR GLASS; DETAILS AT RIGHT SHOW LEADED GLAZING.

IN COMBINING UNITS IN OPENINGS ADD $\frac{1}{8}$ " FOR EACH MULLION OR TRANSOM BAR USED.



SYMMETRICAL COMBINED WIDTHS

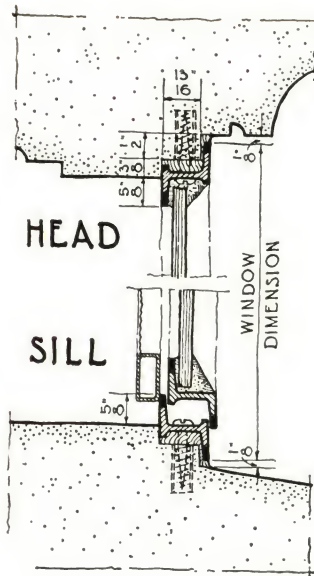
STANDARD WIDTHS	UNITS WIDE	PANES WIDE	PANES WIDE PER UNIT	VERT MULL
1' - 7 $\frac{3}{8}$ "	1	2	2	0
3' - 1 $\frac{1}{2}$ "	1	4	4	0
3' - 2 $\frac{3}{8}$ "	2	4	2,2	1
4' - 7 $\frac{1}{2}$ "	1	6	6	0
4' - 10 $\frac{3}{8}$ "	3	6	2,2,2	2
6' - 1 $\frac{5}{8}$ "	1	8	8	0
6' - 3 $\frac{1}{8}$ "	2	8	4,4	1
6' - 4 $\frac{1}{2}$ "	3	8	2,4,2	2
6' - 5 $\frac{7}{8}$ "	4	8	2,2,2,2	3
7' - 10 $\frac{1}{2}$ "	3	10	2,6,2	2
7' - 10 $\frac{5}{8}$ "	3	10	4,2,4	2
8' - 1 $\frac{3}{8}$ "	5	10	2,2,2,2,2	4

SCALE OF DETAILS : 3" = 1'-0"

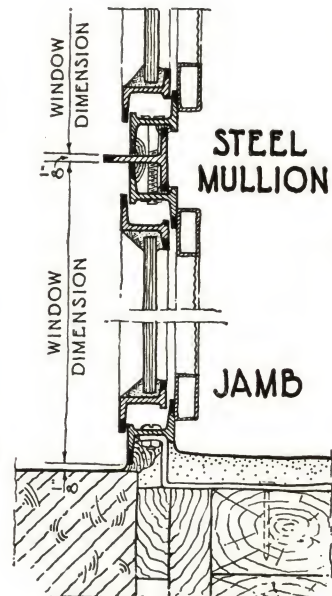
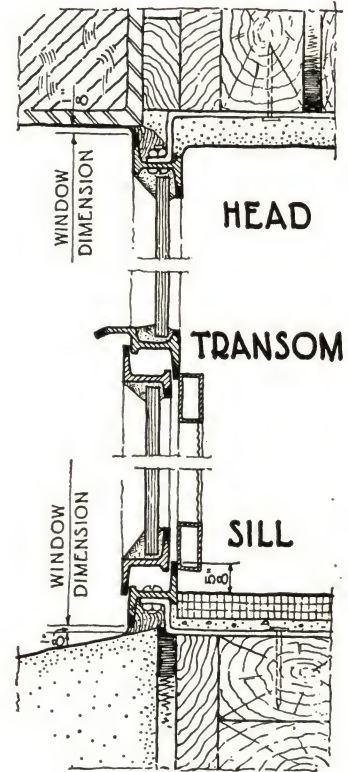
Fenestra
1931

SCREENED FENWROUGHT
GLAZING & GENERAL DETAILS

Plate No
A-210



SET ALL CASEMENTS IN
MASTIC CEMENT WHERE
THEY COME IN CONTACT
WITH BUILDING WORK.



SCALE OF DETAILS - 3/4" = 1'-0"

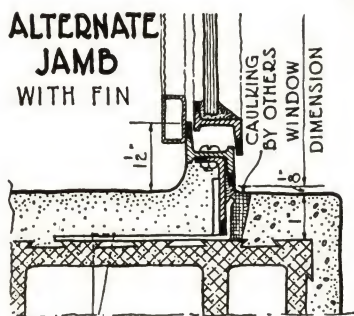
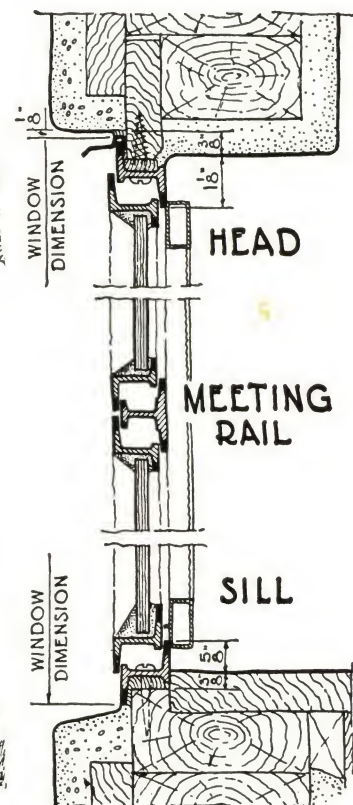
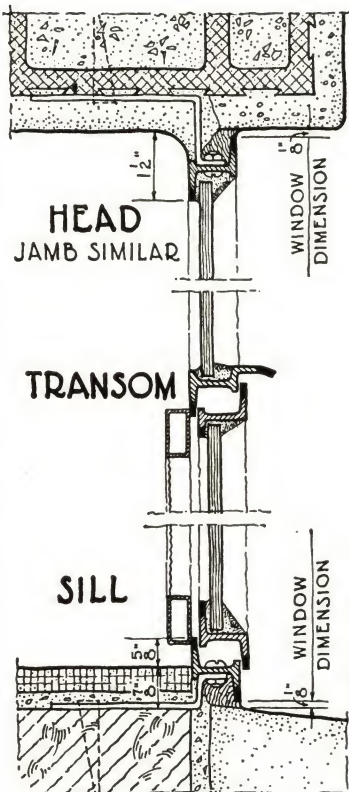


L.A. LAYNE RESIDENCE - RIVER OAKS COUNTRY CLUB
C.W. OLIVER - ARCHITECT
HOUSTON, TEXAS

Fenestra
1930

SCREENED FENWROUGHT
BRICK VENEER & STONE INSTALLATIONS

Plate No
A-207



SCALE OF DETAILS - 3" = 1'-0"

HENRY BARKHAUSEN RES.-WEST PALM BEACH, FLA.
TREANOR AND FATIO - ARCHITECTS.



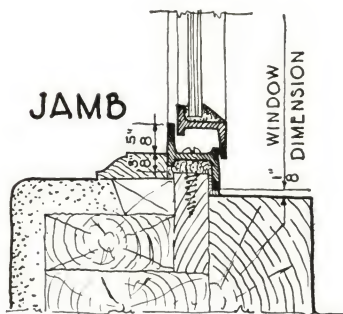
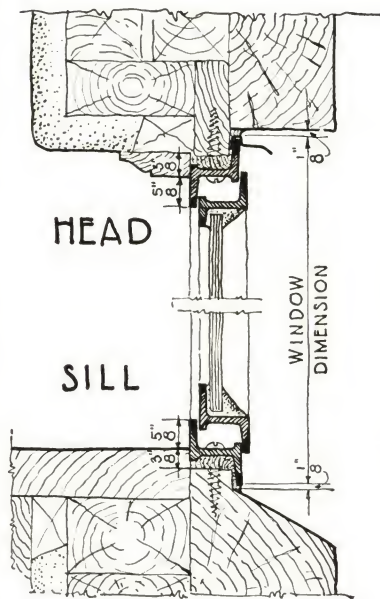
HALLAM COOLEY RES.-LOS ANGELES, CALIF.
JONES AND WARD - ARCHITECTS.

SET ALL CASEMENTS IN
MASTIC CEMENT WHERE
THEY COME IN CONTACT
WITH BUILDING WORK.

Fenestra
1930

SCREENED FENWROUGHT
STUCCO ON HOLLOW TILE & FRAME

Plate No
A-208

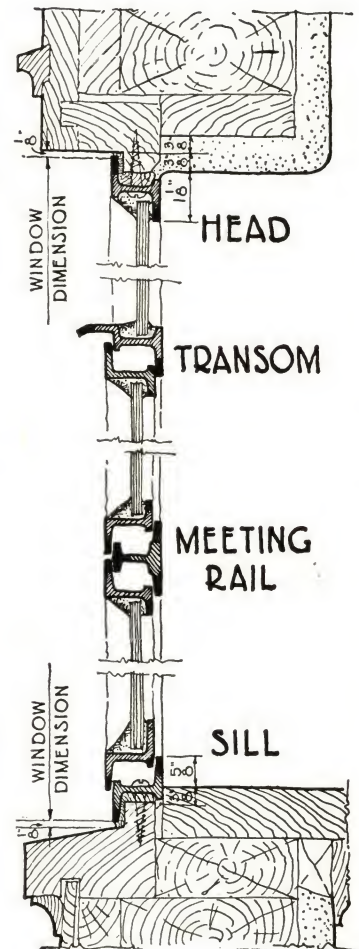


HALF TIMBER

SCALE OF DETAILS - 3" = 1'-0"

CHAS. W. WALKER RES - HEMPSTEAD, L.I., N.Y.
GEORGE R. THOMPSON - ARCHITECT.

NOTE
SET ALL CASEMENTS IN
MASTIC CEMENT WHERE
THEY COME IN CONTACT
WITH BUILDING WORK



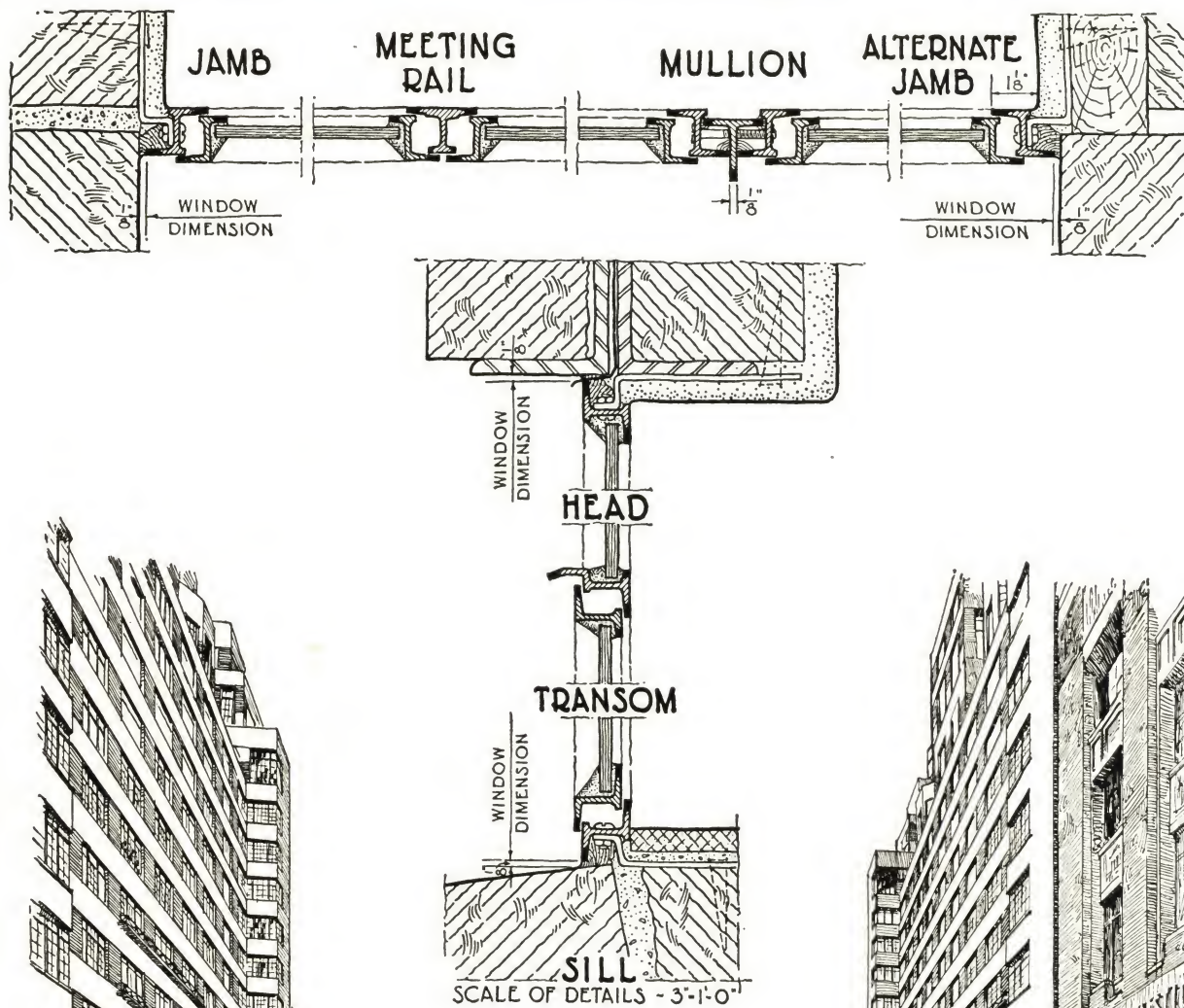
FRAME

BROADMOOR COUNTRY CLUB BUILDING
CLARENCE KING ARCHITECT SHREVEPORT LA.

Fenestra
1930

FENWROUGHT CASEMENTS
HALF TIMBER & FRAME INSTALLATION

Plate No
A-102



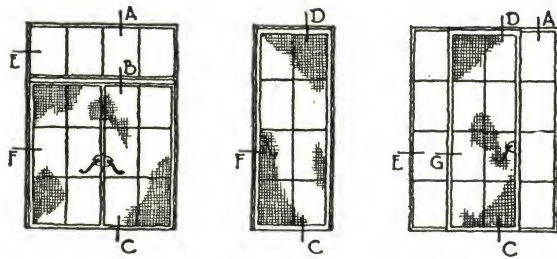
SET ALL CASEMENTS IN
MASTIC CEMENT WHERE
THEY COME IN CONTACT
WITH BUILDING WORK

BEAUX-ARTS APARTMENTS
NEW YORK CITY
FIRM OF KENNETH M. MURCHISON; &
RAYMOND HOOD, GODLEY & FOUILHOUX
ARCHITECTS

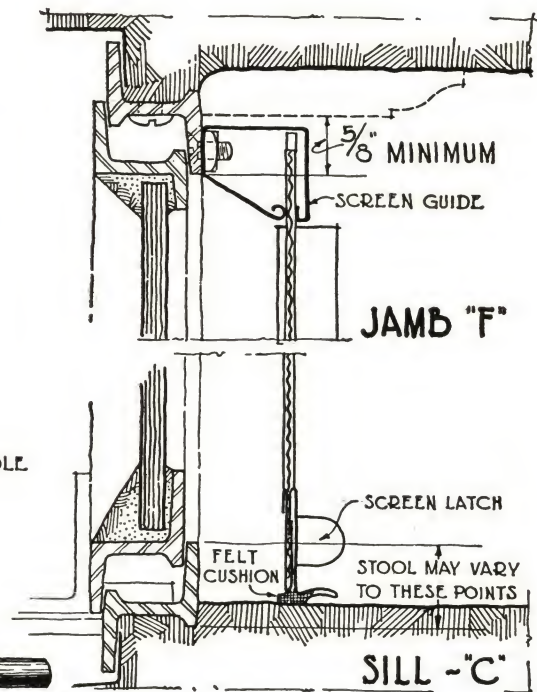
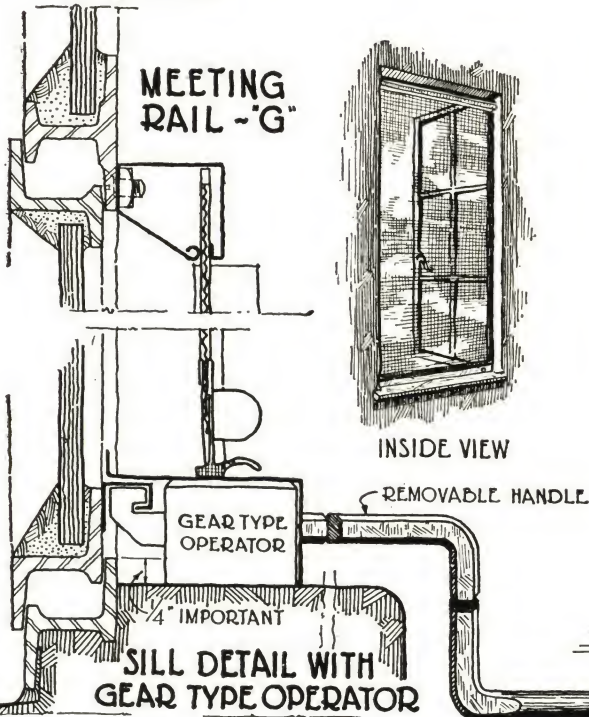
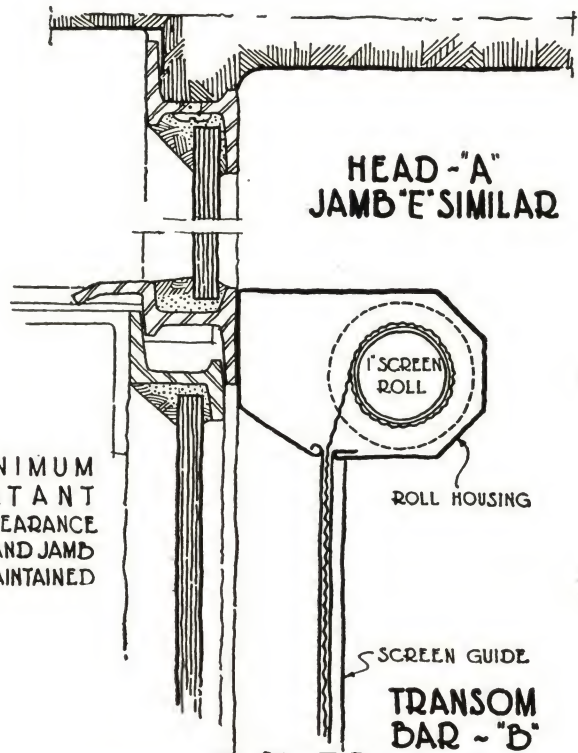
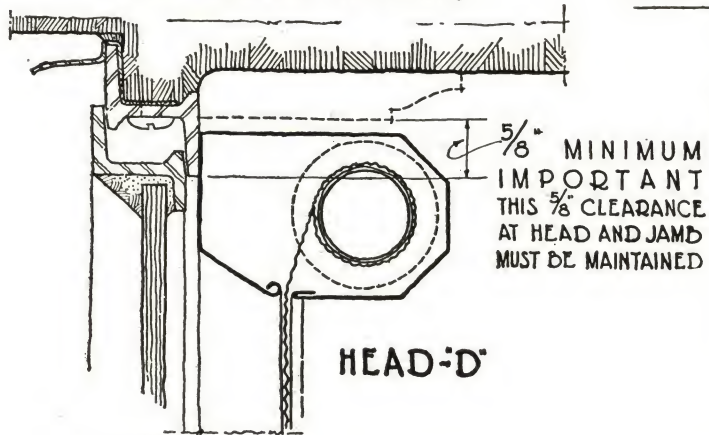
Fenestra
1930

FENWROUGHT CASEMENTS
SOLID BRICK INSTALLATION

Plate No
A-103



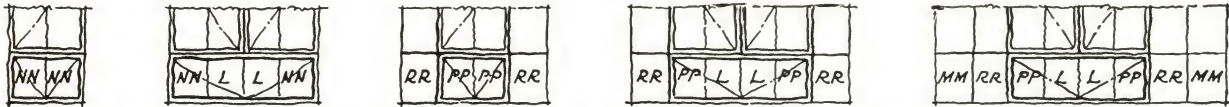
TYPICAL UNITS SHOWING
ROLL-SCREENS ATTACHED



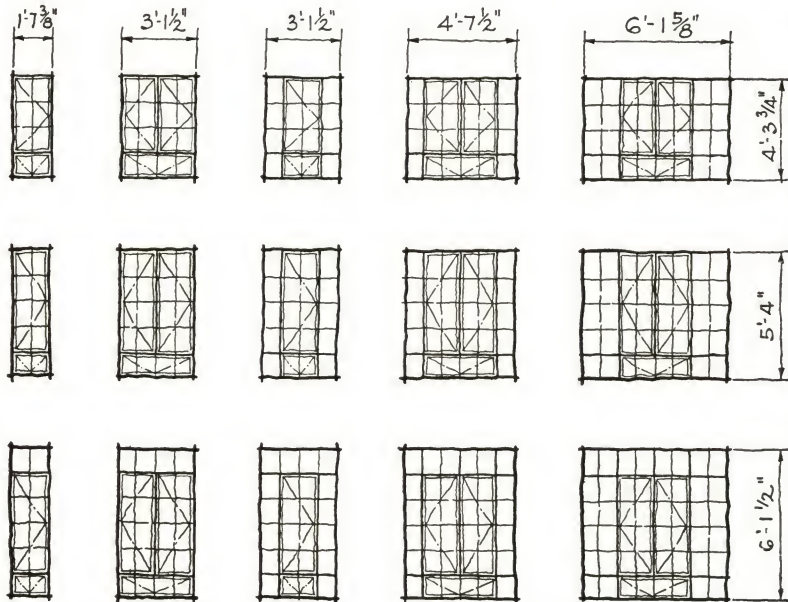
Fenestra
1930

FENESTRA CHAMBERLIN SCREEN
CONSTRUCTION DETAILS

Plate No
A-104



TYPICAL PROJECTED-IN VENTS BUILT INTO FENWROUGHT UNITS
LETTERS INDICATE GLASS SIZES ~ SEE TABLE BELOW ~



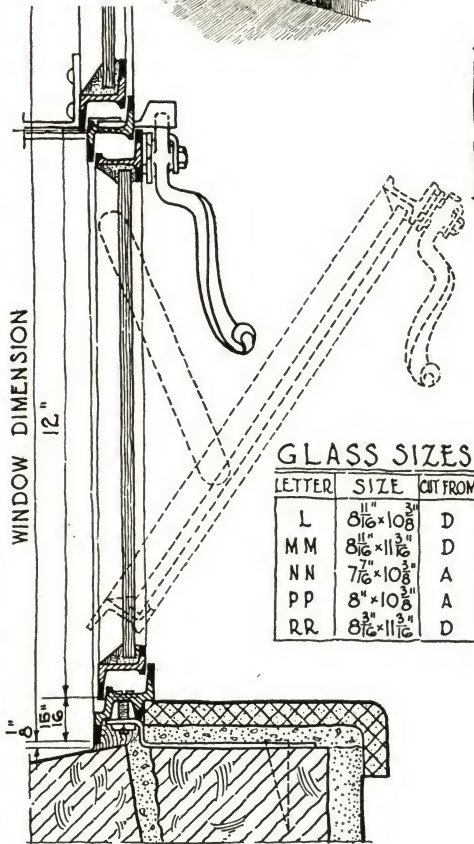
• TYPICAL TYPES •

• NOTES •

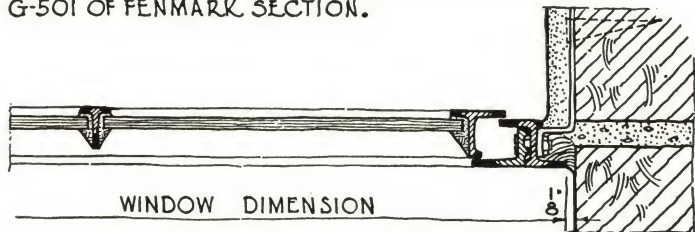
PROJECTED-IN VENTILATORS ARE TWO AND FOUR LIGHTS WIDE AND ONE LIGHT HIGH. ~ THEY CAN BE BUILT INTO ANY CASEMENT OF STANDARD WIDTH AND HEIGHT BUT TYPES SHOWN ABOVE ARE RECOMMENDED.

LOCKING HANDLES ARE FURNISHED IN EITHER IRON OR BRONZE AND OF A DESIGN TO MATCH HANDLES USED ON SIDE HINGED VENTS ABOVE.

SCREENS MAY BE USED WITH PROJECTED IN VENTILATORS. DETAILS OF SCREENING ARE SIMILAR TO THOSE FOR FENMARK PROJECTED-IN SILL VENT SHOWN ON PLATE G-501 OF FENMARK SECTION.



VERTICAL SECTION



HORIZONTAL SECTION

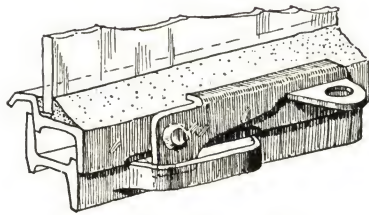
Fenestra
1931

FENWROUGHT CASEMENTS
PROJECTED-IN VENTILATOR

Plate No
A-107

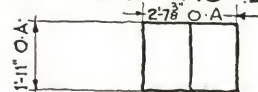
FENESTRA "BASEMENT" WINDOWS

SOLD EXCLUSIVELY THROUGH DEALERS

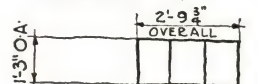


CAM ACTING LOCK
AT THE SILL

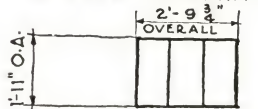
TYPES AND SIZES



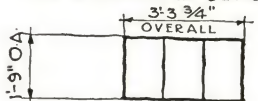
IN CONCRETE BLOCK CONSTRUCTION
FITS OPENING TWO BLOCKS WIDE
BY THREE BLOCKS HIGH WITH A
TROWELED SILL



FOR HOUSES WITH LOW GRADE LINE
WORKS OUT EXCEPTIONALLY WELL
IN BRICK CONSTRUCTION



FOR HOUSES WITH A HIGHER GRADE
LINE WORKS OUT WELL IN BRICK
OR CONCRETE BLOCKS

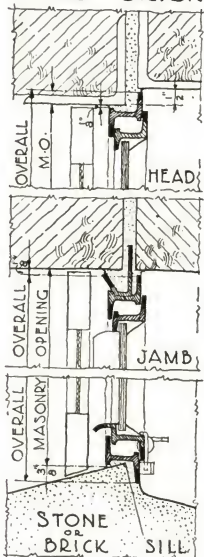


WORKS OUT WELL WITH EITHER
BRICK OR CONCRETE BLOCK AND
IS THE WINDOW MOST USED IN THE
AVERAGE TYPE OF CONSTRUCTION

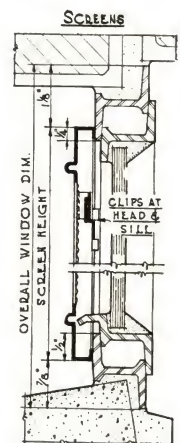
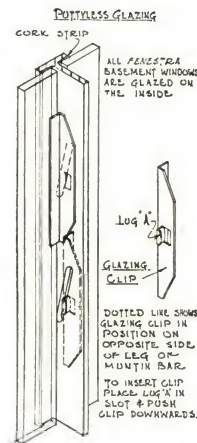
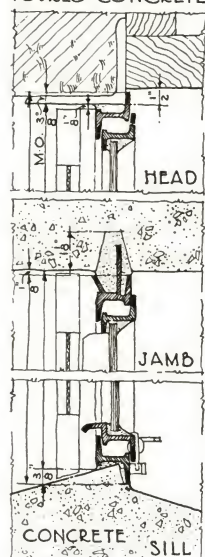
CAM ACTION LOCK

Cam action lock at sill. Hinges of substantial hook design make sash easily removable. Sill and jambs of frame in one continuous piece mitered and welded at corners. Jamb fins, spot welded to frame, provide solid anchorage.

SOLID - BRICK



POURED-CONCRETE



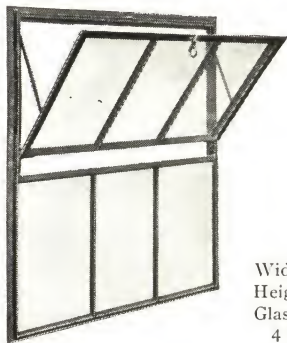
PUTTYLESS GLAZING

At slightly increased cost Fenestra Basement Windows may be obtained with angle glazing clips which hold the glass securely against cork cushion strips, rendering putty unnecessary. See details above.

SCREENS AND WIRE GUARDS

Metal-framed, bronze-mesh screens, with or without wire guards, available at extra cost. See details above.

FENESTRA "UTILITY" WINDOWS

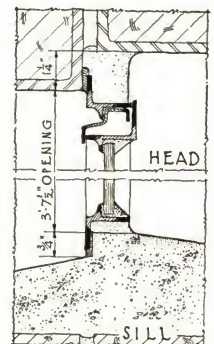


Width, 3' 4 1/2"
Height, 3' 7 1/2"
Glass, 2 Lts. 13"x20";
4 Lts. 12"x20"

The Fenestra Utility Window is specially designed for small buildings, such as private garages, filling stations, shops, stores and basements high above the grade; also for barns, granaries, implement sheds, poultry and hog houses.

It offers all the advantages of steel window construction: more daylight and ventilation, greater ease of operation, protection against fire, theft and the weather. When closed, a spring catch automatically locks the ventilator.

Handily installed in all types of construction, the Fenestra Utility Window fits concrete block exactly—2 1/2 blocks wide and 6 blocks high—with a sill.



UNDERWRITERS' WINDOWS



The following outside putty glazed Fenestra Windows can be furnished bearing the label of the Underwriters' Laboratories, Inc.:

FENMARK AND SCREENED FENMARK WINDOWS

All standard types and sizes may be labeled subject to the restrictions below. Multiples of these types may be used to fill openings up to 9' wide, by bolting together two or more units having interlocking jamb bars, and to fill any width opening by the use of T-bar mullions.

Units can contain ventilators of the side-hung open-out type with friction or non-friction hinges, or a combination of side-hung open-out ventilators and projected-out ventilators.

Side-hung ventilators are limited to 54" high. Projected-out ventilators can be introduced where fixed lights or projected-in ventilators are shown.

Locking hardware may be either iron or bronze. Operating hardware may be any of the types standardized for commercial use.

All glass must be $\frac{1}{4}$ " wire, panes being limited to an exposed area of 350 sq. in. by the introduction of vertical and horizontal muntins. Glass to be held by special coppered steel wire clips and putty.

FENMARK PROJECTED WINDOWS

All standard types and sizes may be labeled subject to the restrictions below. Multiples of these types may be used to fill openings up to 9' wide by bolting together two or more units having interlocking jamb bars, and to fill any width opening by the use of T-bar mullions.

Ventilators must be of the projected-out type. Hardware may be either bronze or iron.

All glass must be $\frac{1}{4}$ " wire, panes being limited to an exposed area of 350 sq. in. by the introduction of vertical and horizontal muntins. Glass must be held by special coppered wire clips and putty.

FENCRAFT AND SCREENED FENCRAFT CASEMENTS

All standard types and sizes, exclusive of curved heads, may be labeled subject to the restrictions below.

Height of any unit is restricted to 6'6". Ventilators may be of the side-hung type with friction or non-friction hinges, or top-hung, open-out type. Side-hung ventilators are limited to 54" high.

Locking hardware may be either bronze or iron. Operators may be any of the types standardized for commercial use.

Glass must be $\frac{1}{4}$ " wire with an exposed glass area limited to 350 sq. in. Glass must be held by special coppered wire clips and putty.

FENWROUGHT AND SCREENED FENWROUGHT CASEMENTS

All standard types and sizes, with the exception of curved heads, may be labeled subject to the restrictions below.

Ventilators may be of the side-hung type with friction or non-friction hinges, or of the top-hung, open-out type. Locking hardware may be of either iron or bronze. Operators may be of the types standardized for commercial use. Glass must be $\frac{1}{4}$ " wire with exposed area limited to 200 sq. in. by the introduction of vertical and horizontal muntins. Glass must be held by special coppered wire clips and putty.

INDUSTRIAL WINDOWS

The following Fenestra Windows, inside glazed with glazing angles, can be supplied bearing the label of the Underwriters' Laboratories, Inc.

All standard types and sizes having over-all dimensions not in excess of 7'x12' may be labeled subject to restrictions below. (Either dimension may be used as width or height.) Multiples of these sizes may be used to fill any width opening by use of T-bar mullion provided width between mullions is 7' or less, and provided area is 84 sq. ft. or less.

Ventilators may be pivoted 2" above center or 4" down from top to open out or may be of projected open-out type. Total ventilator area limited to 3,000 sq. in.

All ventilators must be operated separately. Ventilators pivoted 2" above center may have cam and chain or cam and stay operators. Ventilators pivoted 4" from the top must have cam and stay operators. Projected ventilators may have standard operators of either cam handle or kickout type, in either bronze or iron with chain or pole operation.

All glass must be $\frac{1}{4}$ " wire and is limited to 48" in either width or height and a total exposed area of not over 350 sq. in. Glass to be held by $\frac{7}{16}$ x $\frac{5}{8}$ ", 16-gauge pressed steel angles tapped to outside frame and ventilator bars and bolted through all muntin bars.

FENESTRA PIVOTED WINDOWS

SPECIFICATIONS

Notes are explanatory only and need not be included in the specifications.

GENERAL

HORIZONTALLY PIVOTED WINDOWS shall be Fenestra as manufactured by the Detroit Steel Products Company.

MATERIAL

All sections shall be especially designed, hot rolled, solid steel bars with heavy fillets in all re-entrant angles.

All frame members shall be special angle sections.

MUNTINS shall be especially formed T sections.

MULLIONS AND TRANSOM BARS shall be standard Fenestra, hot rolled, solid steel T sections.

(Note:—Use mullions where two or more windows are used side by side in the same opening. Use transom bars where two or more windows are used one above another. Horizontal structural mullions are not furnished by the window manufacturer.)

CONSTRUCTION

FRAMES AND VENTILATORS shall be mortise and tenon, air hammer riveted at all corners. Provide continuous two-point, flat-contact weathering between ventilators and frames.

MUNTINS shall be continuous from head to sill and from jamb to jamb, so interlocked as to increase their strength at the point of intersection. Joints at frames shall be mortise and tenon, air hammer riveted.

(Note:—All structural steel is furnished by others. Include in the steel specifications all punching to accommodate clips. Where masonry will interfere with installation of clips at time windows are erected, provide that all clip bolts be included and attached by steel contractor.)

ATTACHED HARDWARE

(Note:—Attach at the factory.)

All ventilators shall be horizontally pivoted and supported by external adjustable, special solid rolled steel butts, double machine riveted through window bars and weathering.

(Note:—Butts are set 2" above center unless otherwise specified. They may be set 4" below top of ventilator. If desired, so specify.)

All butts shall have 5/8" solid steel bolts equipped with washers and nuts; each pin shouldered to insure constant, free and easy ventilator operation.

All ventilators shall be provided with solid rolled steel Z bar brackets, triple machine riveted to ventilator sill for attachment of operating hardware.

DETACHED HARDWARE

Provide malleable iron cam latches and rolled steel stay bars or malleable iron latches, chain, chain catches and pulley brackets.

(Note:—For group operation of ventilators see Fenestra Mechanical Operating Devices.)

ERECTION

(Note:—Include in the Masonry Specifications that all masonry openings shall be accurately constructed in accordance with standard Fenestra installation details so that windows may be erected in prepared openings.)

(Note:—Include in the Masonry Specifications that all mortar grouting, pointing, etc., shall be done by the mason contractor after the windows are erected.)

All windows shall be erected in prepared openings by the Fenestra Construction Company under a separate contract.

All windows shall be set plumb and true, properly aligned and securely anchored before glazing.

Standard Fenestra sill anchors (2 for windows up to 6'6" wide; 4 for windows over 6'6" wide) shall be used: if the ventilator comes to the sill of the window; if the window is over 5'0" wide; in all multiple unit openings where the mullions are not anchored into the sills.

PAINTING

All windows shall be given one dip-coat of red mineral paint by the manufacturer before shipment.

(Note:—Include in the Painting Specifications that all windows should be given one additional coat after erection but before glazing. Further painting should be deferred until at least three weeks after glazing, to allow putty to set.)

(Note:—Where desired, Fenestra Construction Company, at reasonable added cost, will do field painting after erection. If desired, so specify including specification of paint and its application.)

GLASS AND GLAZING

(Note:—Include in the Glazing Specifications that glass sizes are to be either 12" x 18" or 14" x 20" but ventilator lights which abut on top, sides, or bottom of the ventilator must be trimmed 1" along the abutting edge.)

Glass shall be 1/4" rough wire, 1/4" factory ribbed, 1/8" factory ribbed, double strength.

(Note:—1/4" glass is recommended. Single strength glass is not recommended.)

Putty shall be a high grade of steel window putty.

(Note:—Ordinary wood sash putty must not be used.)

All windows shall be glazed from the inside, all glass being set in a bed of putty and secured by copper plated, steel spring glazing clips furnished by the window manufacturer. (4 clips to each fixed light; 6 clips to each ventilator light.)

Face putty shall be applied in a neat, clean-cut smooth manner.

(Note:—Do not paint until putty has thoroughly hardened.)

SCREENS

(Note:—Screens are not furnished by the window manufacturer but special metal screens may be had so arranged that the upper half of the screen is outside the ventilator, the lower half, inside.)

PIVOTED WINDOW FITTINGS AND HARDWARE



Horizontal Bar with Nick Cut Out



Vertical Bar Punched for Joint



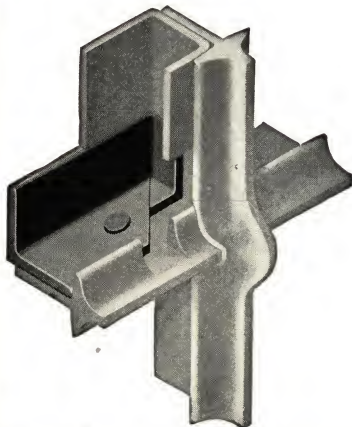
The Completed Fenestra Joint



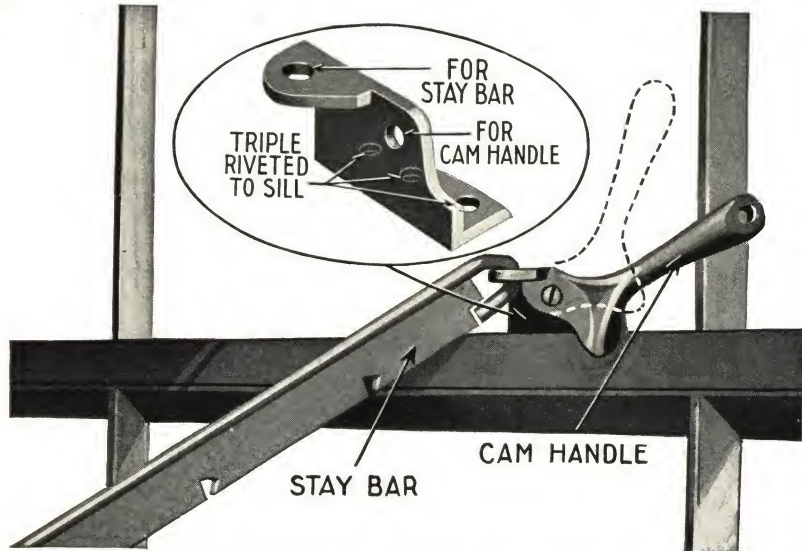
Vertical Bar Expanded to Receive Horizontal Bar



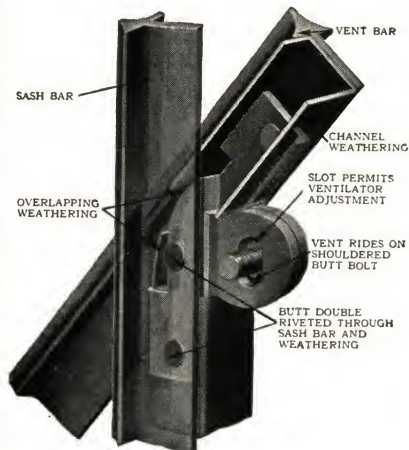
Spring Latch, Chain and Pulley at Head of Ventilator



Weathering Member at Ventilator Sill, Mitered to Guide Water from Building



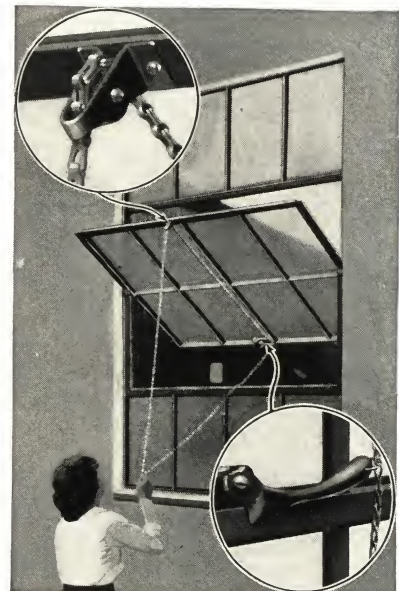
Cam Handle, Stay Bar and Triple Riveted Z-bar Bracket



External, Adjustable, Fenestra Steel Butt



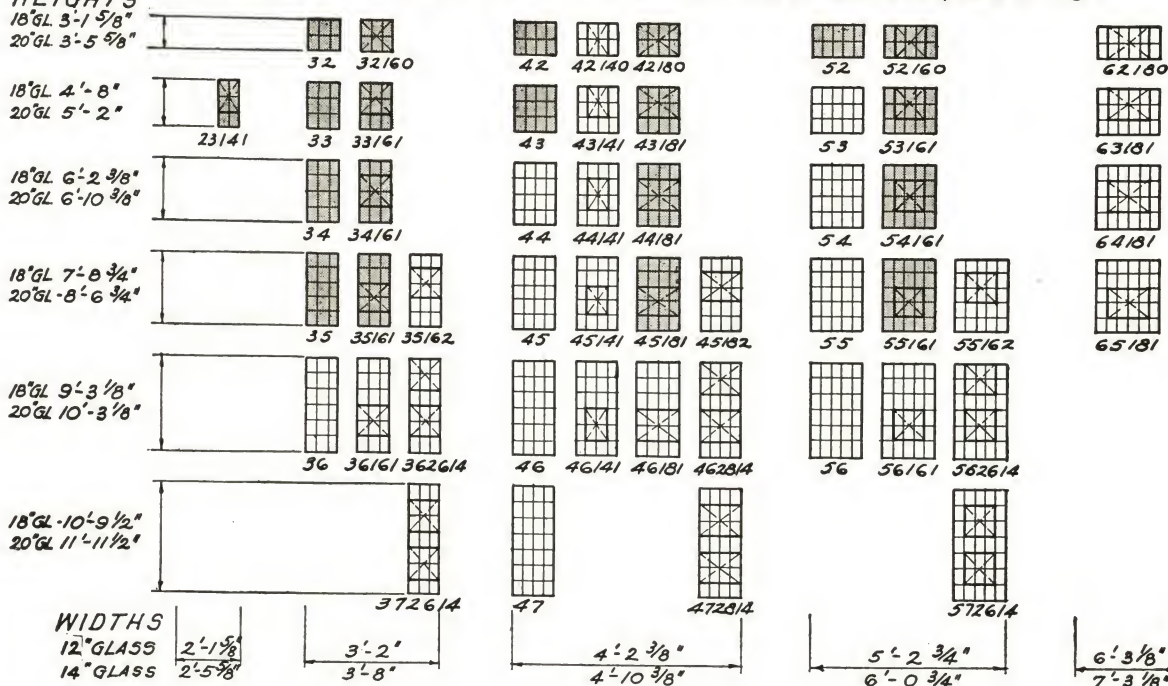
Spring Latch at Sill, Chain Cleats and Chain Passing up over Head Pulley



Cam Handle at Sill with Endless Chain Passing over Pulley at Head

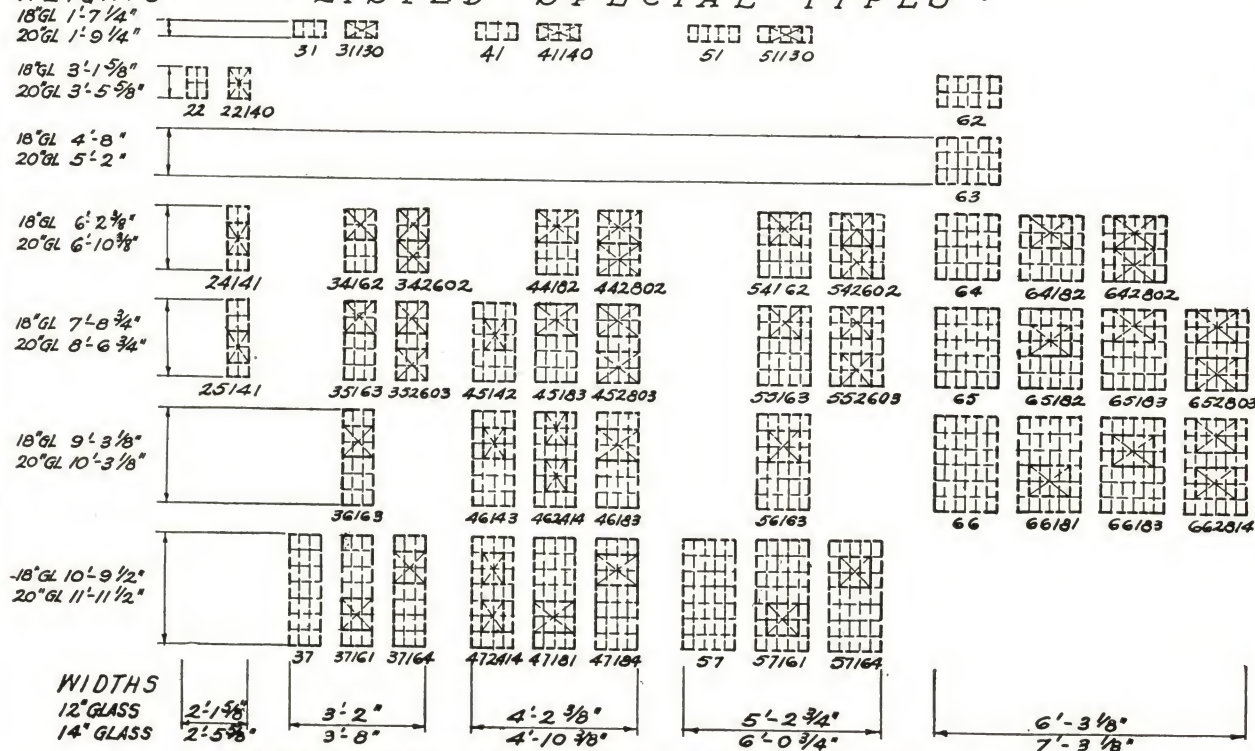
• STANDARD AND STOCK TYPES •
 • STOCK TYPES SHOWN WITH SHADED BACKGROUND •

HEIGHTS



HEIGHTS

• LISTED SPECIAL TYPES •



GLASS COMBINATIONS ARE • 12" × 18" AND • 14" × 20" •

Fenestra
 August 1929

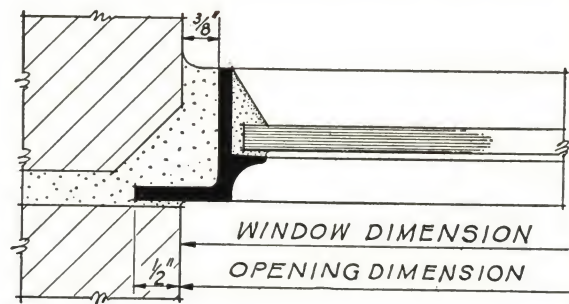
Horizontally Pivoted Windows
 Types and Sizes

Plate No
 L-102

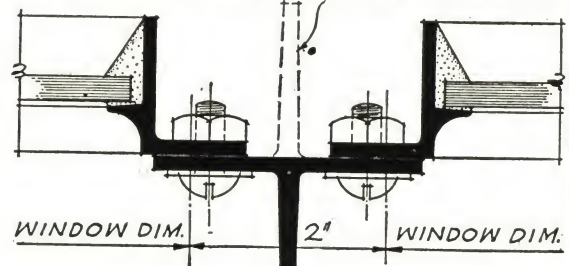
SYMMETRICAL • COMBINATIONS •

OPENING • DIMENSIONS				NO. UNITS IN OPENING	NO. LIGHTS IN OPENING	•ARRANGEMENT OF UNITS IN OPENING • FIGURES INDICATE THE NUMBER OF LIGHTS IN WIDTH OF EACH UNIT.
18" HEIGHTS		20" HEIGHTS				
PANES	DIM.	PANES	DIM.			
2	3'-1 ⁵ / ₈ "	2	3'-5 ⁵ / ₈ "			
3	4'-8"	3	5'-2"			
4	6'-2 ³ / ₈ "	4	6'-10 ³ / ₈ "			
5	7'-8 ¹ / ₄ "	5	8'-6 ³ / ₄ "			
6	9'-3 ¹ / ₈ "	6	10'-3 ¹ / ₈ "			
7	10'-9 ¹ / ₂ "	7	11'-11 ¹ / ₂ "			
12" WIDTHS		14" WIDTHS				
* 2'-1 ⁵ / ₈ "	* 2'-5 ⁵ / ₈ "	1	2			2
3'-2"	3'-8"	1	3			3
4'-2 ³ / ₈ "	4'-10 ³ / ₈ "	1	4			4
4'-5 ¹ / ₄ "	5'-1 ¹ / ₄ "	2	4			2,2
5'-2 ³ / ₄ "	6'-0 ³ / ₄ "	1	5			5
6'-3 ¹ / ₈ "	7'-3 ¹ / ₈ "	1	6			6
6'-6"	7'-6"	2	6			3,3
8'-6 ³ / ₄ "	9'-10 ³ / ₄ "	2	8			4,4
9'-10"	11'-4"	3	9			3,3,3
10'-7 ¹ / ₂ "	12'-3 ¹ / ₂ "	2	10			5,5
10'-10 ³ / ₈ "	12'-6 ³ / ₈ "	3	10			3,4,3
11'-10 ³ / ₄ "	13'-8 ³ / ₄ "	3	11			3,5,3
11'-10 ³ / ₄ "	13'-8 ³ / ₄ "	3	11			4,3,4
12'-8 ¹ / ₄ "	14'-8 ¹ / ₄ "	2	12			6,6
12'-11 ¹ / ₈ "	14'-11 ¹ / ₈ "	3	12			4,4,4
13'-2"	15'-2"	4	12			3,3,3,3
13'-11 ¹ / ₂ "	16'-1 ¹ / ₂ "	3	13			4,5,4
13'-11 ¹ / ₂ "	16'-1 ¹ / ₂ "	3	13			5,3,5
14'-11 ⁷ / ₈ "	17'-3 ⁷ / ₈ "	3	14			4,6,4
14'-11 ⁷ / ₈ "	17'-3 ⁷ / ₈ "	3	14			5,4,5
15'-2 ³ / ₄ "	17'-6 ³ / ₄ "	4	14			3,4,4,3
16'-0 ¹ / ₄ "	18'-6 ¹ / ₄ "	3	15			5,5,5
16'-0 ¹ / ₄ "	18'-6 ¹ / ₄ "	3	15			6,3,6
16'-6"	19'-0"	5	15			3,3,3,3,3
17'-0 ⁵ / ₈ "	19'-8 ⁵ / ₈ "	3	16			5,6,5
17'-0 ⁵ / ₈ "	19'-8 ⁵ / ₈ "	3	16			6,4,6
17'-3 ¹ / ₂ "	19'-11 ¹ / ₂ "	4	16			4,4,4,4
17'-3 ¹ / ₂ "	19'-11 ¹ / ₂ "	4	16			3,5,5,3
17'-6 ³ / ₈ "	20'-2 ³ / ₈ "	5	16			3,3,4,3,3
18'-1"	20'-11"	3	17			6,5,6
18'-6 ³ / ₄ "	21'-4 ³ / ₄ "	5	17			3,4,3,4,3
19'-1 ³ / ₈ "	22'-1 ³ / ₈ "	3	18			6,6,6
19'-4 ¹ / ₄ "	22'-4 ¹ / ₄ "	4	18			3,6,6,3
19'-4 ¹ / ₄ "	22'-4 ¹ / ₄ "	4	18			4,5,5,4
19'-7 ¹ / ₈ "	22'-7 ¹ / ₈ "	5	18			3,4,4,4,3
20'-7 ¹ / ₂ "	23'-9 ¹ / ₂ "	5	19			3,5,3,5,3
21'-5"	24'-9"	4	20			5,5,5,5
21'-5"	24'-9"	4	20			4,6,6,4
21'-7 ¹ / ₈ "	24'-11 ¹ / ₈ "	5	20			4,4,4,4,4
21'-10 ³ / ₄ "	25'-2 ³ / ₄ "	6	20			3,3,4,4,3,3

* TWO LIGHT WIDE UNITS ARE FURNISHED IN THREE LIGHT HEIGHTS ONLY • •

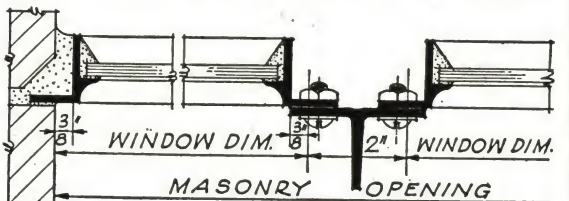
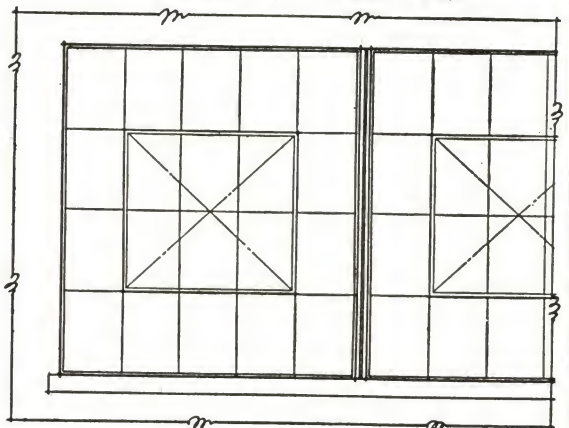


WHEN DESIRED STEM OF MULLION CAN BE TURNED IN AS SHOWN BY DOTTED LINES



OUTSIDE

• SCALE: HALF-FULL-SIZE •



• TYPICAL • COMBINATION •

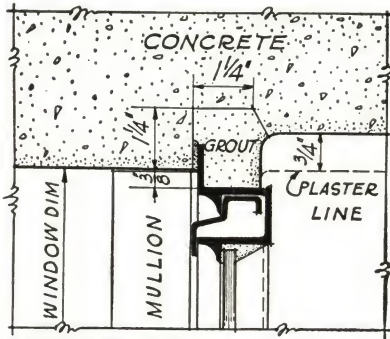
• SCALE: 3" = 1'-0" •

NOTE: IN FIGURING OPENING SIZES FOR COMBINED UNITS, ADD TOGETHER THE WINDOW DIMENSIONS PLUS 2" FOR EACH VERTICAL MULLION. STANDARD COMBINATIONS ARE GIVEN IN THE TABLE. WHEN USING TABLE ALWAYS COMBINE 18" HEIGHTS WITH 12" WIDTHS AND 20" HEIGHTS WITH 14" WIDTHS.

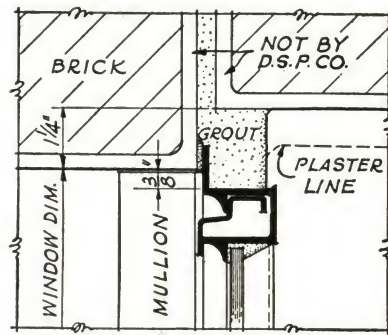
Fenestra
August 1929

Horizontally Pivoted Windows
Standard Combinations

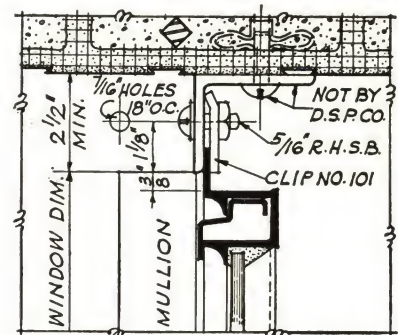
Plate No
L-103



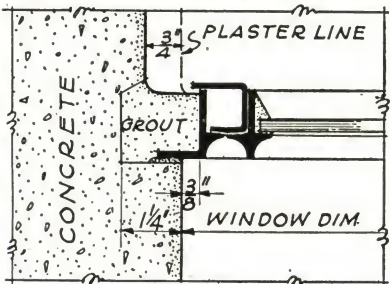
•HEAD-1-B• REBATE IN THE SOFFIT PERMITS INSTALLATION OF WINDOWS AFTER WALL IS BUILT.



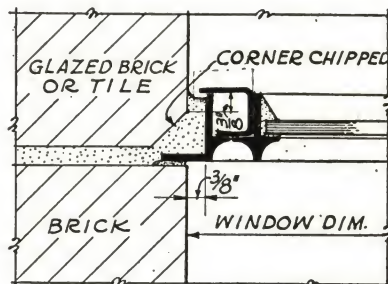
•HEAD-4-A• ANGLE SHOULD ALWAYS BE OFFSET AS SHOWN



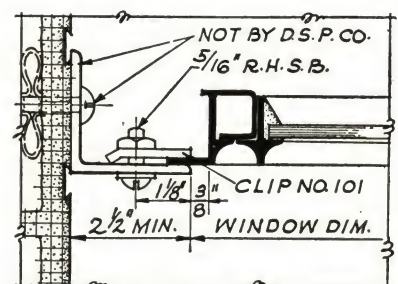
•HEAD-7-A• STEEL ANGLE FRAME IN TILE OPENINGS.



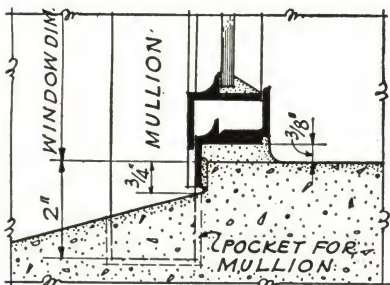
•JAMB-2-A FOR SINGLE OR MULTIPLE UNIT OPENINGS



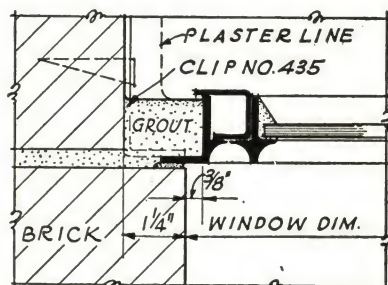
•JAMB-5• FOR MULTIPLE UNIT OPENINGS ONLY



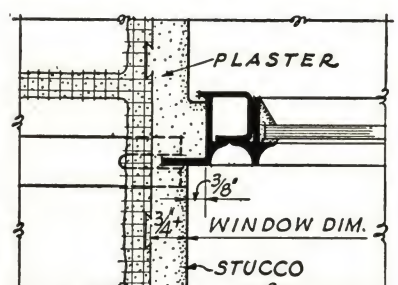
•JAMB-8-A• STEEL ANGLE FRAME IN TILE OPENINGS.



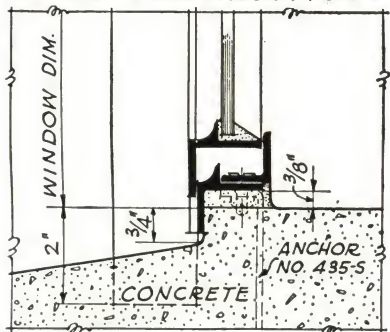
•SILL-3• PRECAST CONCRETE MAY ALSO BE USED FOR BRICK OR TILE CONSTRUCTION



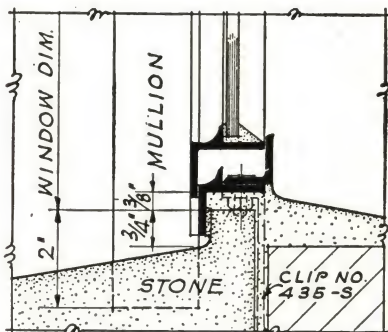
•JAMB-5-A• FOR SINGLE OR MULTIPLE UNIT OPENINGS.



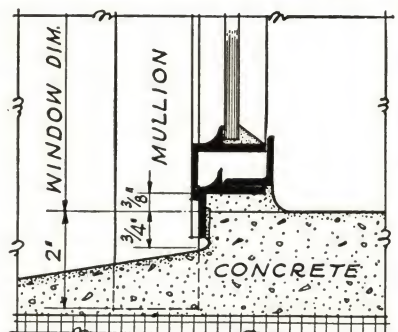
•JAMB-8-B• WITH SPLIT CLIP FURNISHED BY D.S.P.CO.



•SILL-3-A• POURED CONCRETE ANCHOR CLIP FURNISHED BY D.S.P.CO.



•SILL-6-A• CUT STONE. AS ALTERNATES USE DETAILS 3 OR 3A.



•SILL-9• CONCRETE SILL. POURED AFTER WINDOW IS SET

•CONCRETE•

•BRICK•

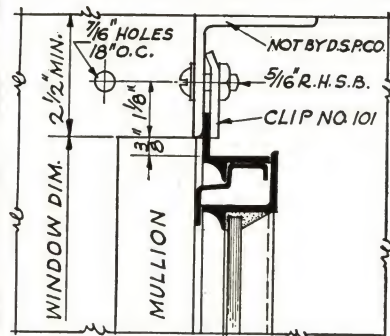
•TILE•

•SCALE: 3" = 1'-0"•

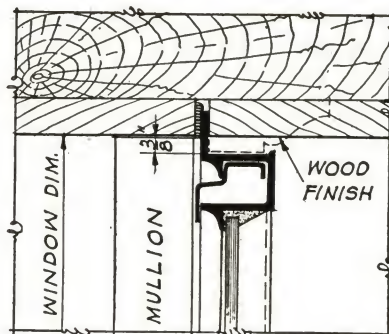
Fenestra
August 1929

Horizontally Pivoted Windows
Installation Details

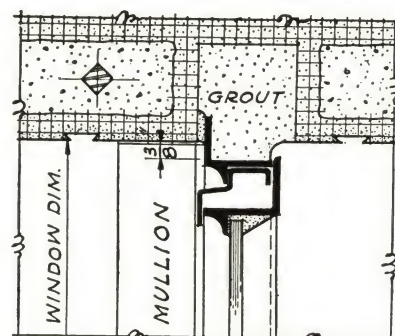
Plate No
L-104



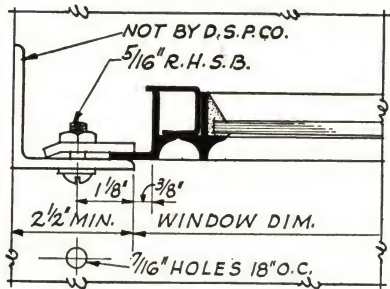
•HEAD-10• STEEL ANGLE.
CLIP & BOLT FURNISHED BY D.S.P.CO.



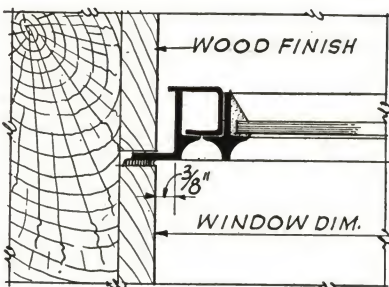
•HEAD-13• DOTTED LINES
SHOW ALTERNATE FINISH.



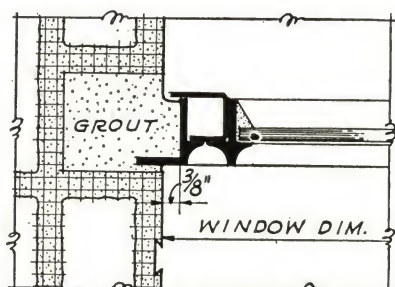
•HEAD-7• FOR TILE LINTEL
WITH STEEL WINDOW RAGGLE AS SHOWN



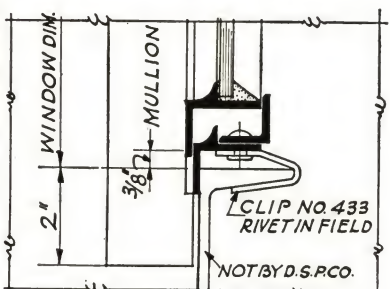
•JAMB-11• STEEL ANGLE
CLIP & BOLT FURNISHED BY D.S.P.CO.



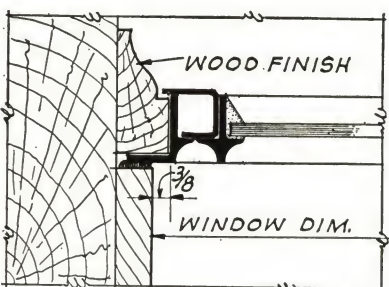
•JAMB-14• PLAIN TRIM.



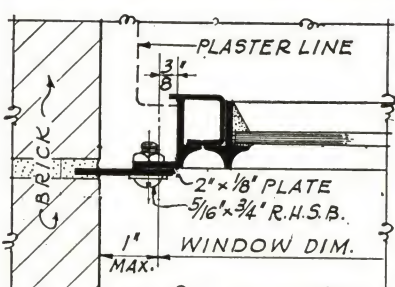
•JAMB-8• FOR TILE WITH
STEEL WINDOW RAGGLE AS SHOWN.



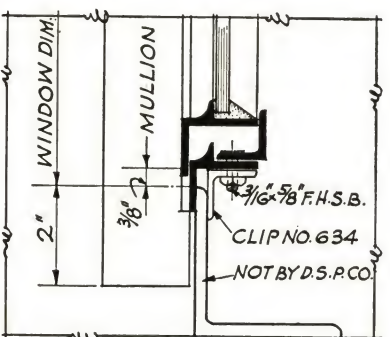
•SILL-12-A• STEEL CHANNEL
CLIP & RIVET FURNISHED BY D.S.P.CO.



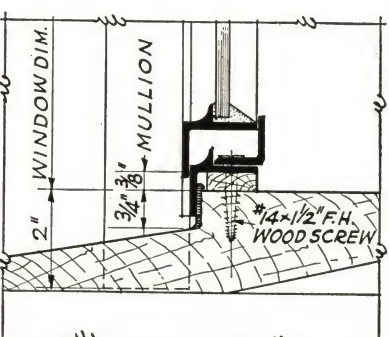
•JAMB-14-A• MOLDING
FINISH ALTERNATE FOR JAMB-14



•JAMB-5-B• DETAIL
USING JAMB PLATE



•SILL-12-B• STEEL ANGLE.
CLIP & BOLT FURNISHED BY D.S.P.CO.



•SILL-15• WOOD APRON & SILL.

• STEEL •

• WOOD •

• SCALE : 3" = 1'-0" •

• MISCELLANEOUS •

THE MULLIONS SHOWN WITH THESE DETAILS HAVE THE STEM TURNED OUT. IT IS ADVISABLE TO DO THIS AS GREATER STIFFNESS IS SECURED.

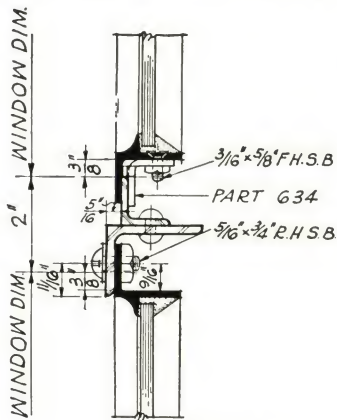
WITH STEEL WORK THIS IS ESSENTIAL IN ORDER TO AVOID NOTCHING OF THE STEEL OR A SPECIAL CUT-OFF OF MULLIONS.

ANCHORING MULLIONS AT SILL AS SHOWN IS RECOMMENDED.

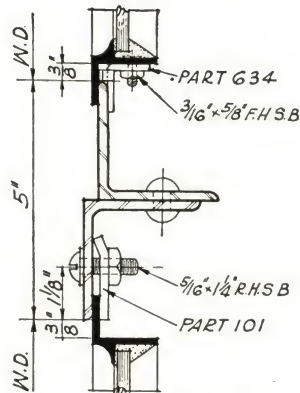
Fenestra
August 1929

Horizontally Pivoted Windows
Installation Details

Plate No
L-105

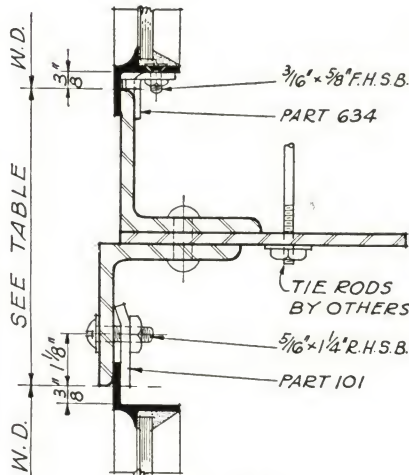


• TYPE - 1 •

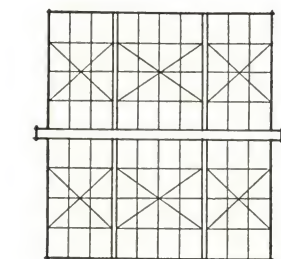
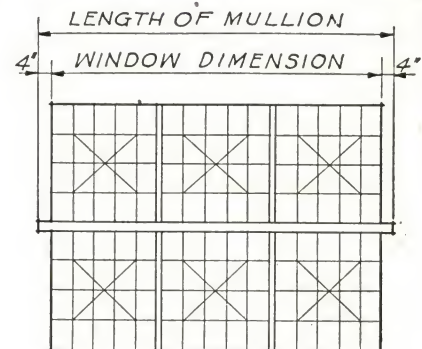
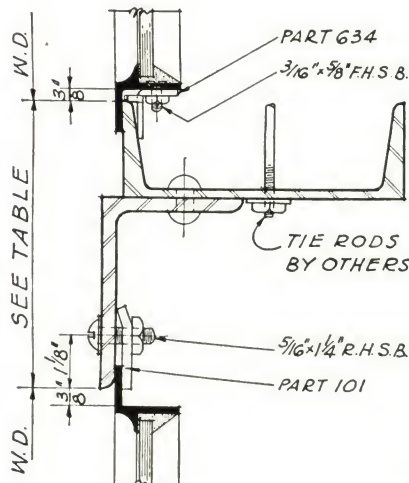


• TYPE - 2 •

• TYPICAL • OPENING • TYPE NO. 1 •
• TYPICAL • OPENING • TYPE • NO. 2 •



• TYPE - 3 •

• TYPICAL • OPENING •
• TYPES • NO. 3 & 4 •• TYPICAL • OPENING •
• TYPES • NO. 3 & 4 •

• TYPE - 4 •

• DETAILS • SCALE. 3\"/>

• TABLE • OF • HORIZONTAL •
• MULLION • SIZES •

LIGHTS WIDE	MULL. TYPE NO.	• ANGLES •		PLATE OR CHANNEL	ESTIMATED WEIGHT OF MULL PER FT.	BETWEEN WINDOW DIMENS.
		REQD	• SIZE •			
SINGLE UNIT OPENINGS	1	1	1" × 1" × 1/8"	NONE	3.0 LBS	2"
		1	2" × 1 1/2" × 3/16"			
• 12" × 18" SIZE GLASS •						
3 TO 9	2	2	2 1/2" × 2 1/2" × 3/16"	NONE	6.5 LBS	5"
10 TO 13	3	2	2 1/2" × 2 1/2" × 3/16"	6" × 1/4" PLT.	11.5 LBS	5 1/4"
10 TO 13	4	1	3 1/2" × 2 1/2" × 1/4"	4" CHANNEL	10.5 LBS	5 1/4"
14 TO 18	3	2	3" × 3" × 5/16"	6" × 1/4" PLT.	17.5 LBS	6 1/8"
14 TO 18	4	1	4" × 3" × 5/16"	6" CHANNEL	15.5 LBS	6 1/8"
• 14" × 20" SIZE GLASS •						
3 TO 8	2	2	2 1/2" × 2 1/2" × 3/16"	NONE	6.5 LBS	5"
9 TO 11	3	2	2 1/2" × 2 1/2" × 3/16"	6" × 1/4" PLT	11.5 LBS	5 1/4"
9 TO 11	4	1	3 1/2" × 2 1/2" × 1/4"	4" CHANNEL	10.5 LBS	5 1/4"
12 TO 16	3	2	3" × 3" × 5/16"	6" × 1/4" PLT.	17.5 LBS	6 1/8"
12 TO 16	4	1	4" × 3" × 5/16"	6" CHANNEL	15.5 LBS	6 1/8"

• 12\"/>

3 TO 9	2	2	2 1/2\"/>
--------	---	---	-----------

• 14\"/>

3 TO 8	2	2	2 1/2\"/>
--------	---	---	-----------

TIE RODS SHOULD SUPPORT HOR MULLION IN OPNGS. OVER 10'-0"

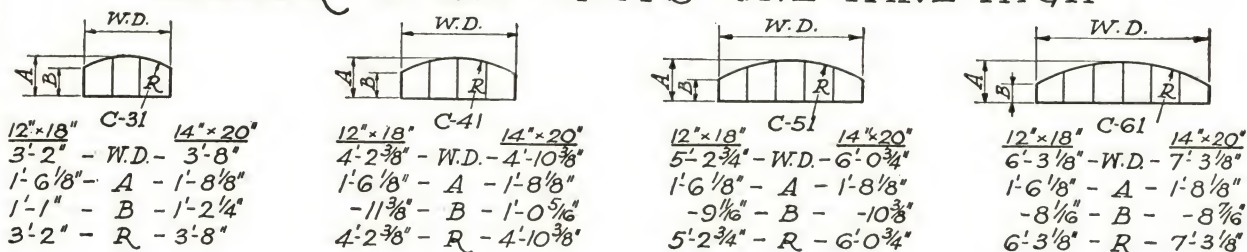
• SCALE 3\"/>

Fenestra
August 1929

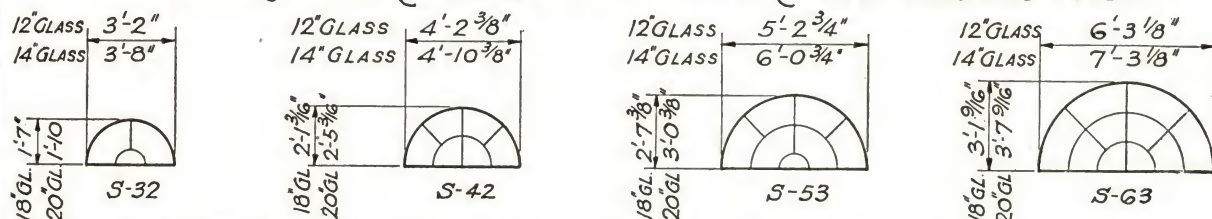
Horizontally Pivoted Windows
Horizontal Mullion Details

Plate No.
L-107

CAMBER HEAD UNITS ONE PANE HIGH



SEMICIRCULAR UNITS NOT OVER SIX PANES WIDE



ALL ABOVE CAMBER HEAD AND SEMICIRCULAR UNITS HAVE NO. 70 SECTION AT SILL FOR ATTACHMENT TO TOP OF SINGLE SQUARE HEAD UNIT, OR FOR INDIVIDUAL INSTALLATION. SEE FIG.-1 BELOW.

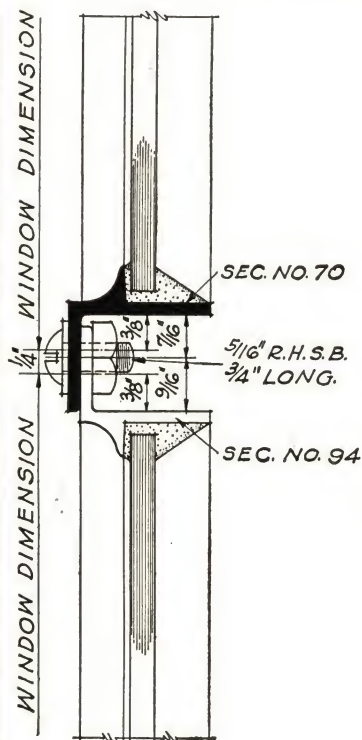


FIG. -1

SECTION THRU UNIT
UP TO AND INCLUDING
SIX PANES IN WIDTH.

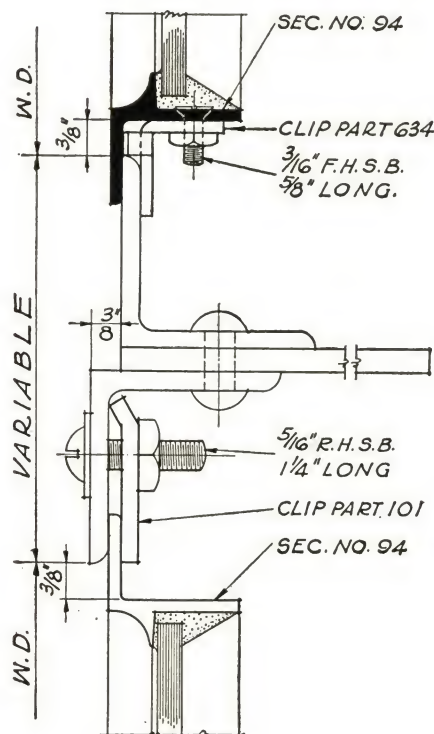
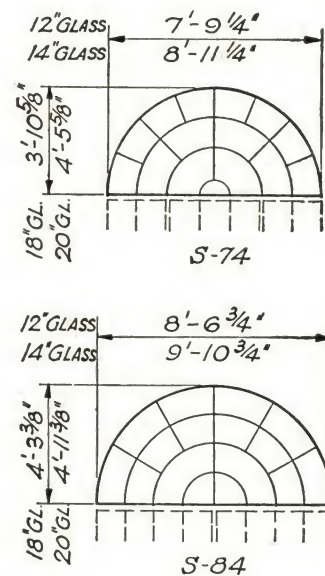


FIG. -2

SECTION THRU UNIT OVER SIX
PANES IN WIDTH.

SEMICIRCULAR UNITS MORE THAN SIX PANES WIDE



SEMICIRCULAR UNITS MORE THAN SIX PANES WIDE HAVE NO. 94 SECTION AT SILL FOR ATTACHMENT TO MULTIPLE UNIT OPENING WITH STRUCTURAL HORIZONTAL MULLION, OR FOR INDIVIDUAL INSTALLATION. SEE FIG. 2

DETAILS SCALE: HALF-FULL-SIZE

Fenestra
August 1929

Horizontally Pivoted Windows
Camber and Semi-Circular Heads

Plate No
L-109

FENESTRA PROJECTED WINDOWS

COMMERCIAL TYPE — SPECIFICATIONS

GENERAL

Windows shall be Fenestra Commercial Projected as manufactured by Detroit Steel Products Company.

MATERIAL—CONSTRUCTION

(Note:—Same as these specifications for Fenestra Horizontally Pivoted Windows.)

ATTACHED HARDWARE

(Note:—Attach at the factory.)

Ventilators shall swing out from the bottom while sliding down from the top or swing in from the top while sliding up from the bottom, as indicated.

Each ventilator shall be accurately balanced on two supporting arms of solid spring steel attached to the ventilator with bronze shoulder pivots, equipped with bronze washers. Connections between supporting arms and window frame shall be made by malleable iron brackets rigidly supported on the horizontal frame members or muntins and double riveted to the vertical frame members or muntins with arms attached by bronze shoulder pivots.

Each ventilator shall be equipped with two channel shaped bronze friction shoes sliding vertically in the ventilator jambs and so constructed that through galvanized compression springs uniform tension is secured. Shoes shall be accurately gauged and located and solidly riveted in place to assure proper, constant pressure at the jambs.

Each *open-out* ventilator shall be equipped with two shouldered, alignment control bronze springs riveted to the channel jambs.

(Note:—The shoulders of these springs are so designed and located as to limit the downward travel of the friction shoes and stop all *open* ventilators in uniform alignment of approximately 60 degrees. When it is desired to open the ventilator at a greater angle or reverse for washing, light pressure on the springs depresses the shoulders and allows the friction shoes to slide past. As the ventilator is returned to a closed position, the action of the spring is automatic.)

Each *open-in* ventilator shall be equipped with a solid steel stop which prevents its opening farther than 90°

DETACHED HARDWARE

All hardware shall be (malleable iron) (bronze).

(Note:—Bronze at added cost over iron.)

Locking and Operating Devices.

(1) For *open-out* ventilators within reach from floor—Malleable iron cam handle attached to Z bar bracket by bolt and nut, Part 150.

(2) For *open-out* ventilators beyond reach from floor—Riveted malleable iron pole ring at head of ventilator, malleable iron cam handle.

(3) For *open-in* ventilators within reach from floor—Riveted malleable iron spring latch with finger ring handle at head of ventilator, Part 147.

(4) For *open-in* ventilators beyond reach from floor—Riveted malleable iron spring latch with endless chain, Part 146, at head of ventilator. Riveted iron chain guide, at sill, or riveted malleable iron spring latch with pole hook ring handle, Part 147, at head.

ERECTION—PAINTING—GLAZING

(Note:—Same as these specifications for Horizontally Pivoted Windows.)

PROVISIONS FOR SCREENS

(Note:—Include in the Carpentry Specifications the necessary clauses covering wood trim required in conjunction with screens. Space between inside screen and window must not be less than 2" to clear standard hardware.

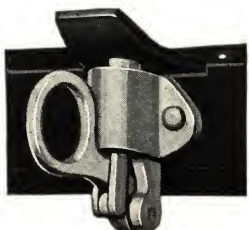
SCREENS AND SHADES

(Note:—On *open-out* ventilators, metal side hinged or vertical sliding screens may be used as desired. Rolling screens up to 6'0" wide may be used where entire window is covered. On *open-in* ventilators, metal (removable) (fixed) outside screens may be used.)

(Note:—Where desired the window manufacturer will furnish, at reasonable added cost, removable tubular steel frame, rewirable screens (baked enameled finish) with No. 16 mesh bronze screen cloth. These screens are well constructed and furnished completely adapted to and fitting the ventilator opening.)

(Note:—All shades must be located at least 2" from the inside face of the window for hardware clearance.)

(Note:—Shade bracket clips, designed to attach by drilling and tapping two small holes at the top of each jamb section, are supplied at slight added cost. These clips are of sufficient depth to bring the shade bracket in the proper position and are slotted to accommodate any standard shade bracket. Shade clips cannot be used satisfactorily with rolling screens, but shade brackets may be attached to the under side of screen box.)



Spring Latch with Ring,
Part 147



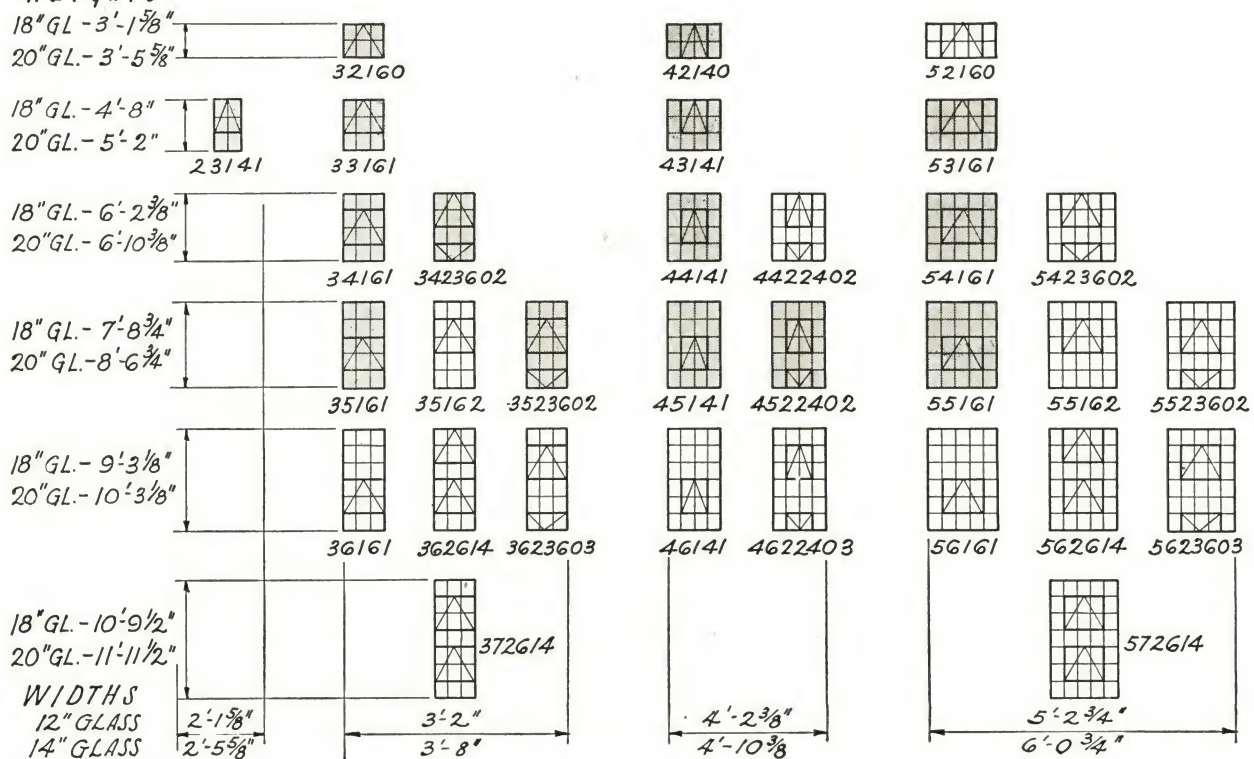
Cam Handle, Part
150, and Strike



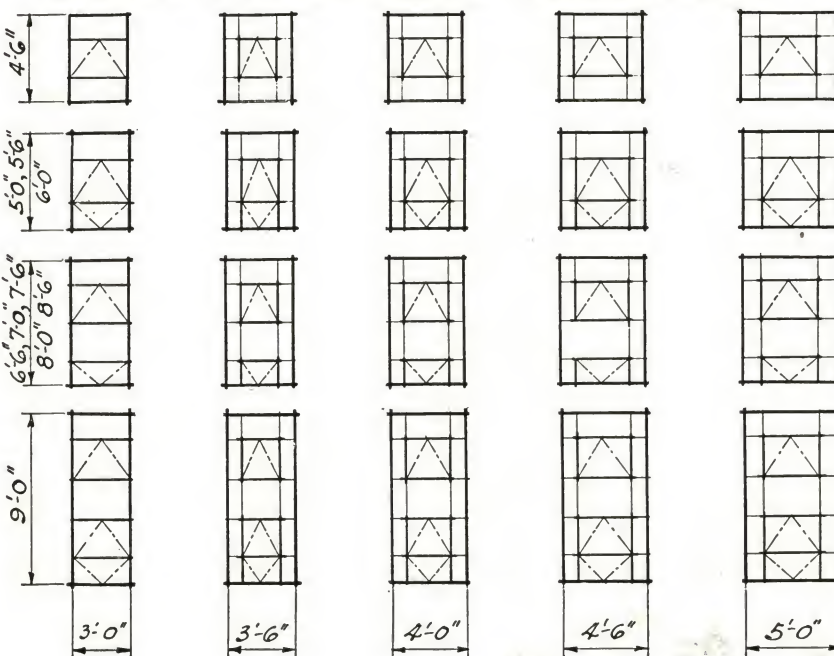
Spring Latch with
Chain, Part 146

STANDARD TYPES ~ COMMERCIAL PROJECTED

HEIGHTS



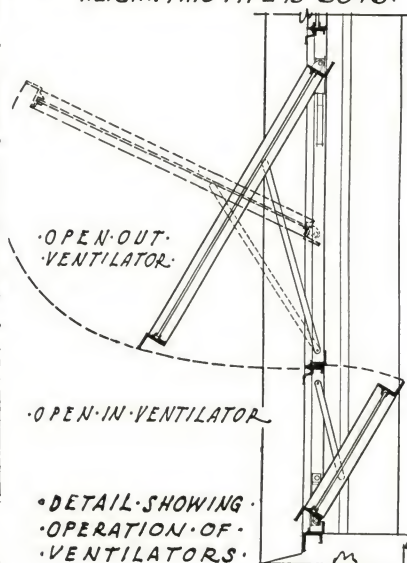
TYPICAL STANDARD TYPES & SIZES ARCHITECTURAL PROJECTED



NOTES

COMMERCIAL TYPES SHOWN
SHADED ARE CARRIED IN STOCK

FOR NOMENCLATURE OF ARCH.
PROJ. TYPES COMBINE WIDTH &
HEIGHT. THIS TYPE IS *5046.



Fenestra

1932

Fenestra Projected Windows
Commercial and Architectural Types

Plate No

G-205

ARCHITECTURAL TYPE — SPECIFICATIONS

ARCHITECTURAL PROJECTED WINDOWS are similar to Commercial Projected types in general construction and operation, but differ chiefly in the following particulars:

FRAME MEMBERS are unequal leg channel sections.

Standard types vary from 3'0" wide to 5'0" wide including 3'6", 4'0", and 4'6". Standard heights vary from 4'6" to 9'0" and include 5'0", 5'6", 6'0", 6'6", 7'0", 7'6", 8'0", and 8'6".

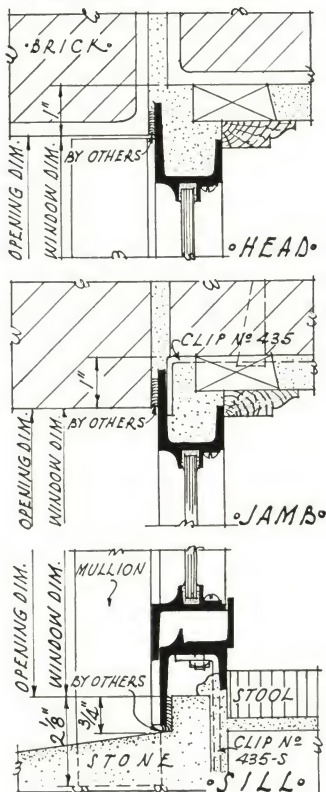
TRANSOM BARS are solid rolled steel Z bars and angles or structural angles and channels.

CAM HANDLE brackets are of malleable iron triple riveted to the ventilators.

Hardware is of the same general design as that used on Commercial Projected Windows but is standardized in bronze with oxidized finish.

GLASS is held by glazing angles.

ARCH. PROJECTED IN • SOLID BRICK •



ARCHITECTURAL
PROJECTED
FRAME SECT.
FULL SIZE

NOTE: COMMERCIAL PROJECTED
INSTALLATION DETAILS SAME AS FOR
HORIZ. PIVOTED, PLATES L-104 & 105

COMMERCIAL PROJECTED WINDOWS
Symmetrical Combined Widths

12"x18" Glass	14"x20" Glass	Units Wide	Lights Wide	Number of Units and Lights per Unit
2' 1 5/8"	2' 5 5/8"	1	2	2
3' 2"	3' 8"	1	3	3
4' 2 3/8"	4' 10 3/8"	1	4	4
4' 5 1/4"	5' 1 1/4"	2	4	2, 2
5' 2 3/4"	6' 0 3/4"	1	5	5
6' 6"	7' 6"	2	6	3, 3
8' 6 3/4"	9' 10 3/4"	2	8	4, 4
9' 10"	11' 4"	3	9	3, 3, 3
10' 7 1/2"	12' 3 1/2"	2	10	5, 5
10' 10 3/8"	12' 6 3/8"	3	10	3, 4, 3
11' 10 3/8"	13' 8 3/8"	3	11	3, 5, 3
12' 11 1/8"	14' 11 1/8"	3	12	4, 4, 4
13' 11 1/8"	16' 1 1/8"	3	13	4, 5, 4
13' 11 1/8"	16' 1 1/8"	3	13	5, 3, 5
14' 11 1/8"	17' 3 1/8"	3	14	5, 4, 5
15' 2 3/4"	17' 6 3/4"	4	14	3, 4, 4, 3
16' 0 1/4"	18' 6 1/4"	3	15	5, 5, 5
17' 3 1/2"	19' 11 1/2"	4	16	4, 4, 4, 4
19' 4 1/4"	22' 4 1/4"	5	18	4, 5, 5, 4
20' 7 1/2"	23' 9 1/2"	5	19	5, 3, 3, 5
21' 5"	24' 9"	4	20	5, 5, 5, 5

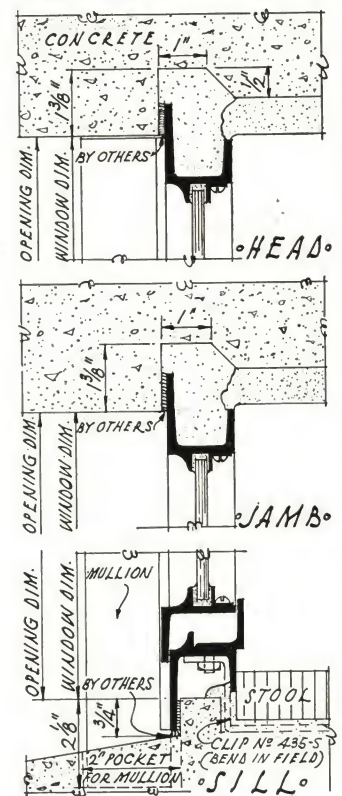
Combine width dimensions in Col. 1 with 12" x 18" glass height only.
Combine width dimensions in Col. 2 with 14" x 20" glass heights only.

ARCHITECTURAL PROJECTED WINDOWS
Symmetrical Combined Widths

Width of Open- ing	Units Wide	Lights Wide	Arrangement of Units in Opening (Letter "M" Indicates Mullion)
6' 2"	2	2	3' 0" - M - 3' 0"
7' 2"	2	6	3' 6" - M - 3' 6"
8' 2"	2	6	4' 0" - M - 4' 0"
9' 2"	2	6	4' 6" - M - 4' 6"
9' 4"	3	3	3' 0" - M - 3' 0" - M - 3' 0"
9' 10"	3	5	3' 0" - M - 3' 6" - M - 3' 0"
10' 2"	2	6	5' 0" - M - 5' 0"
10' 4"	3	5	3' 0" - M - 4' 0" - M - 3' 0"
10' 4"	3	7	3' 6" - M - 3' 0" - M - 3' 6"
10' 10"	3	5	3' 0" - M - 4' 6" - M - 3' 0"
10' 10"	3	9	3' 6" - M - 3' 6" - M - 3' 6"
11' 4"	3	5	3' 0" - M - 5' 0" - M - 3' 0"
11' 4"	3	7	4' 0" - M - 3' 0" - M - 4' 0"
11' 4"	3	9	3' 6" - M - 4' 0" - M - 3' 6"
11' 10"	3	9	3' 6" - M - 4' 6" - M - 3' 6"
11' 10"	3	9	4' 0" - M - 3' 6" - M - 4' 0"
12' 4"	3	7	4' 6" - M - 3' 0" - M - 4' 6"
12' 4"	3	9	4' 0" - M - 4' 0" - M - 4' 0"
12' 4"	3	9	3' 6" - M - 5' 0" - M - 3' 6"

Use these dimensions with any height dimension.

ARCH. PROJECTED IN • CONCRETE CONSTR. •



COMMERCIAL
PROJECTED
FRAME SECTION
FULL SIZE

Fenestra

1932

Fenestra Projected Windows
Installation Details

Plate No

G-206

CONTINUOUS WINDOWS

SPECIFICATIONS

Notes are explanatory or advisory only and need not be included in the specifications.

(Note:—Intermediate structural vertical members should be provided approximately 8' to 12' apart.)

(Note:—Structural Steel Girts, at heads and sills of Continuous Windows, are not furnished by the window manufacturer, and should be provided for in the Structural Steel Specifications.)

(Note:—Sheet metal flashing at heads, sills, and ends of runs is not furnished by the window manufacturer, and should be provided for in the Roofing and Sheet Metal Specifications.)

GENERAL

CONTINUOUS TOP HUNG WINDOWS shall be Fenestra as manufactured by Detroit Steel Products Company.

(Note:—Fenestra Continuous Windows are particularly designed for use in monitor and sawtooth roof construction where the plane of the windows is on a slope. They may be used in vertical planes where necessary.)

(Note:—Standard units of Continuous Windows measure 20' in length (dimension points equal the clear opening.) We recommend for the economical arrangement of operator arms that units vary on multiples of 4' (8', 12', 16'). Smaller units may be used if necessary, in widths varying in multiples of 2' (8', 10', 12', 14', 16', 18').

MATERIAL

All sections shall be especially designed, hot rolled, solid steel bars with heavy fillets in all re-entrant angles. HEAD AND END JAMB MEMBERS shall be special angles. MUNTINS shall be special T's 1 $\frac{3}{8}$ " deep.

SILLS shall be special design sections with a long down-standing leg bent at the end to make close contact with the building construction.

CONSTRUCTION

All members of the window shall be accurately fitted and rigidly riveted at the joints to form standard panel units. Panels shall be joined, end to end midway between T muntins, by splice plates bolted to head and sill members.

(Note:—Panels are joined at the time of erection.)

At the ends of all swing sections next the building construction there shall be provided stationary 1' panels.

Between the ends of swing sections there shall be provided stationary 2' panels.

The joint between ends of swing sections and stationary end sections (and stationary intermediate sections) shall be covered and protected by a specially formed, 14-gauge, steel channel with one leg secured to the end angle of the swing section and designed to overlap the end angle of the stationary section.

Where so indicated, provide 2' wide storm panels secured to stationary end (and intermediate) panels by a steel plate and to the sill by sill clips. Panels shall underlap the swing window section and shall be provided at sill with a formed continuous drip board, set over the sill flashing.

ATTACHED HARDWARE

(Note:—Attach at the factory.)

All CONTINUOUS WINDOWS shall be top hung on heavy malleable iron butts, with $\frac{3}{8}$ " brass pins, spaced 4' apart on centers. Butts shall be rigidly riveted to the head angle and furnished with bolts for attachment to the building girts.

ERECTION

All CONTINUOUS WINDOWS shall be erected by the Fenestra Construction Company, under a separate contract.

All windows shall be erected in a thoroughly workman-like manner ready for glazing.

PAINTING

All windows shall be given one dip-coat of red mineral paint by the manufacturer before shipment.

(Note:—The following should be provided for in the Painting Specifications:

"One additional coat of paint should be applied after erection but before glazing. Further painting should be deferred until at least three weeks after glazing to allow putty to set. One or more additional coats may then be applied as required.")

(Note:—Where desired, the Fenestra Construction Company at reasonable added cost will do field painting after erection. If required, so specify here, including specification for paint and its application.)

GLASS AND GLAZING

Glass shall be $\frac{1}{4}$ " rough wire glass.

Putty shall be a high grade of steel window putty.

(Note:—Ordinary wood sash putty must not be used.)

All CONTINUOUS WINDOWS shall be glazed from the outside. All glass shall be set in a heavy bed of putty and secured at muntins and end angles by angle clips secured with bolts. Face putty shall be applied at sills in a neat, clean-cut, smooth manner.

(Note:—Do not paint until putty has thoroughly hardened.)

CONTINUOUS FIXED WINDOWS

(Note:—The Specification for Continuous Fixed Windows is the same as that for Continuous Top Hung Windows except that all window units are stationary (no swing sections). Heavy steel angle clips bolted to the window head and the building girts are substituted for the butts. Steel sill clips, furnished with the window and shipped flat, are bolted to the sill of the window and bent around the steel sill girt to rigidly secure the window in position at the bottom.)

CONTINUOUS BOTTOM HUNG WINDOWS

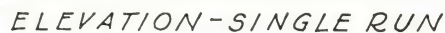
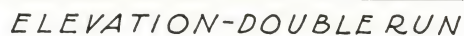
(Note:—In general the specification for Continuous Bottom Hung Windows is the same as that for Continuous Top Hung Windows except in the following particulars:

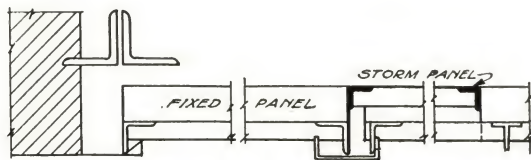
[a] The head section is a special T.

[b] The sill section is a special angle designed to take the butts attached to a special girt.

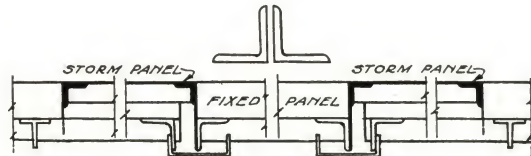
[c] The weathering caps are attached, with the legs out, to the fixed end or intermediate panels instead of to the swing sections.

[d] The windows are glazed on the inside with face putty at both head and sill.)

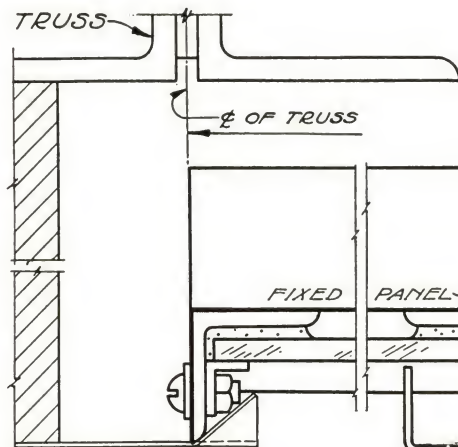




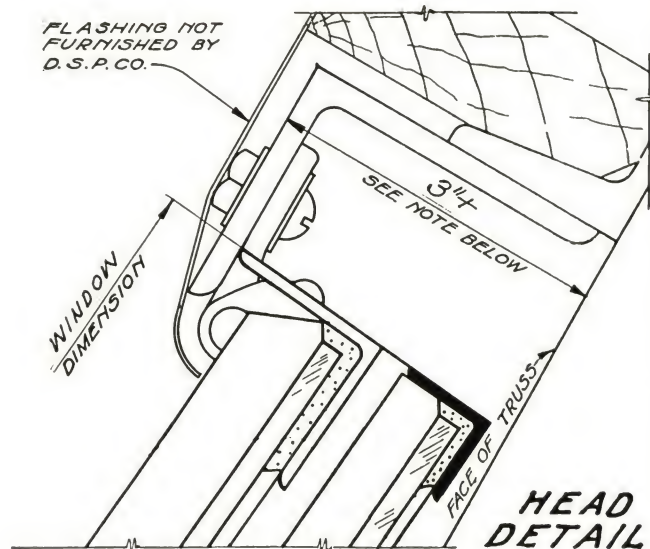
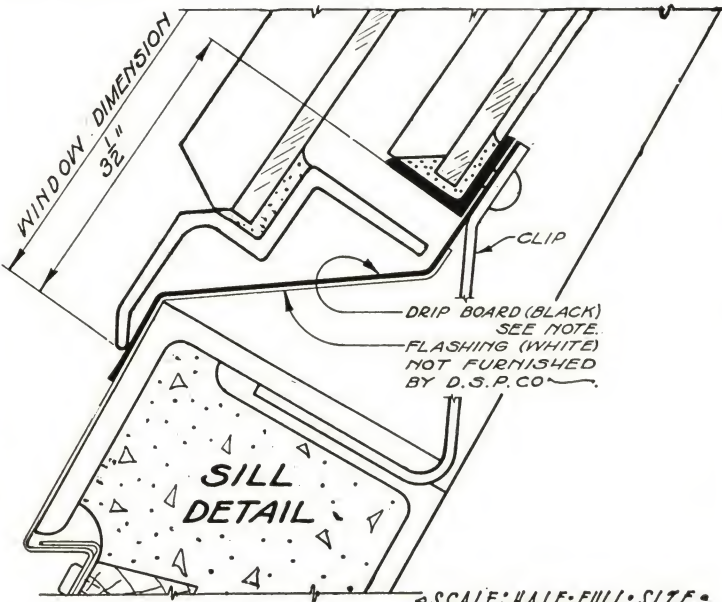
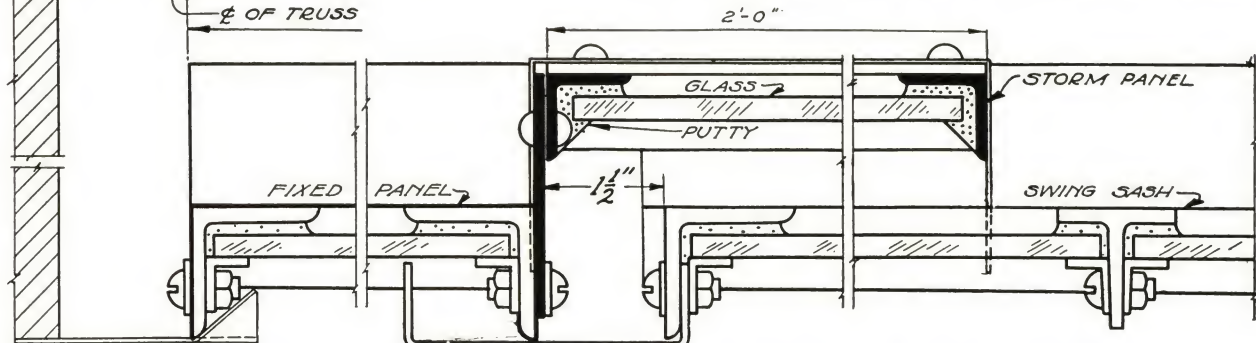
TYPICAL DETAIL AT END OF SWING RUN



TYPICAL DETAIL BETWEEN SWING RUNS

FLASHING NOT
FURNISHED
BY D.S.P.CO.

TYPICAL HORIZONTAL SECTION THRU STORM PANEL.

HEAD
DETAIL

SCALE: HALF-FULL-SIZE

NOTE

Storm panels can be used only with top hung windows. They are recommended only for windows 30° or less off the vertical.

When panels are used in front of vertical steel members or diagonal bracing a clear distance of not under 4 in. must be used.

A drip board (shown in black at sill) is furnished as part of panel. This drip should not be confused with flashing at sill which is not furnished by DETROIT STEEL PRODUCTS COMPANY.

The height of glass in panel is equal to window dimension minus 4 in. The glass width is 1 ft. 11½ in.

Fenestra
August 1929

Continuous Windows, Top Hung
Storm and End Panels

Plate No
P-104

FENESTRA OPERATING DEVICES

SO many different conditions are encountered in designing Fenestra operators that the following descriptions and limits should be regarded as explanatory and advisory only.

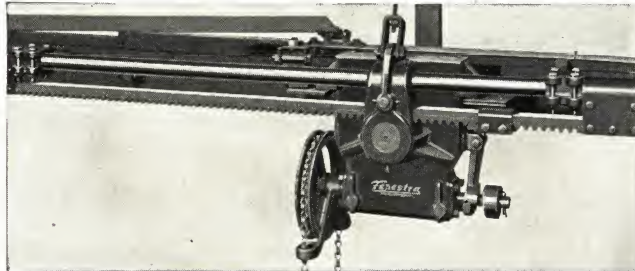
Fenestra operators are not sold as separate products but only as a means of mechanically opening and closing Fenestra windows. All Fenestra operators are erected by our own erection department, the Fenestra Construc-

tion Company, which supplies the necessary support brackets for both power and transmission lines, lines the operator plumb and true and leaves it in good working order.

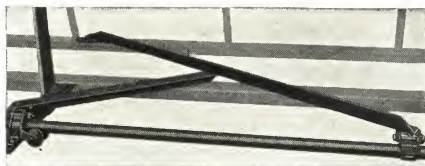
All operating equipment, especially electrically controlled equipment, needs occasional inspection and lubrication. Provision should be made for reaching powers or motors without undue inconvenience.

CONTINUOUS OPERATOR

Designed to operate one or several continuous windows in line (top hung or bottom hung) in either vertical or sloping planes. Unusually heavy construction and extreme care in assembly give this operator unusual strength and reliability. The power is applied through straight line motion levers. Since the leverage increases faster than the load, the operation becomes continuously easier as the windows open. This is an exclusive Fenestra principle.



Above—The Fenestra Continuous Power. Right—Continuous Lever Arm Assembly



Power is a case-hardened, machine cut, high carbon steel worm operating a special alloy, non-ferrous bronze worm gear with straight face, machine cut teeth and extra heavy hub and rim. Worm and worm shaft are turned down from a solid steel bar. Worm and gear are oil encased in an oil-tight box. Worm shaft is provided with ball thrust bearing.

Worm gear fits over a 1" square steel shaft which drives a high carbon steel, heat-treated pinion in mesh with high carbon steel rack, carrying machine cut teeth. Worm gear and pinion are broached out to fit the shaft with the permanence and reliability of a single piece. Rack is suspended from hangers rigidly clamped to the transmission line, thus transmitting power in a horizontal direction. A steel stop clutch, rigidly attached to the worm shaft, operates to cut off the power as the window is closed.

Power transmission line is 1" wrought iron pipe in 20' lengths joined by solid steel plugs with a drive fit riveted in two directions. Operating arms are steel angles,



Continuous Operator on a Run of Continuous Top Hung Sash

one arm twice as long as the other. One end of the short arm is pivoted to the center of the long arm, the other end attached by a universal pivot to a housing on the operator support. One end of the long arm is attached to the window and the other end is clamped through a universal joint to the transmission line. Operating arms are spaced approximately 10' on centers.

Power is operated: (a) By chain and chain wheel, the hub of the latter being broached to fit the flattened end of the worm shaft and secured by a set screw and cotter pin. (b) By electrical power unit operating through a sprocket and chain as in Rack and Pinion operator.

Power may be located near either end of the run, not closer than 20' to the end. For limits of operation see a Fenestra representative, as numerous factors such as arrangement of windows, their height and the degree of opening, must be considered.

WORM AND GEAR OPERATOR

Designed for ventilators horizontally pivoted 2" above center. May be used with top pivoted ventilators. Power consists of a machine cut, cast iron worm, equipped



Worm and gear power, power line and operating arm

with ball thrust bearings, operating a cast iron segmental worm gear assembled in a steel housing. Hub of the gear reamed to fit power transmission line and rotate it on the gear axis. Power line is of 1" black wrought iron pipe

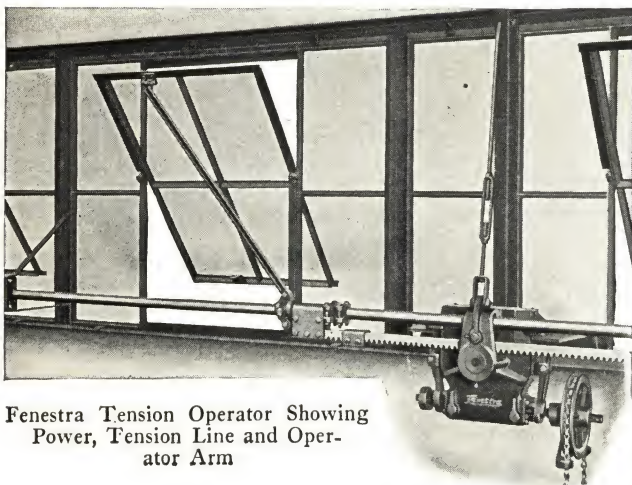
made continuous by steel plugs with a drive fit in two directions. Adjustable steel operating arms are rigidly clamped to the transmission line and attached to the ventilators by steel brackets.

Power is operated: (a) By a chain passing over a chain wheel which is broached to accurately fit the flattened end of the worm shaft and secured by a set screw and cotter pin. (b) By a 1" black wrought iron pipe connected to the worm shaft and carried down vertically to a miter gear (with removable crank) encased in a gear box.

Power may be vertical or inclined, located at either end or at any intermediate point. Operator limited to 12 single 2-pane high vents in a single run and 40' on either side of the power. Multiple runs limited to 9 single 2-pane high vents and 20' on either side of the power. Miter gears limited to 9 single 2-pane high vents each.

TENSION OPERATOR

Designed to operate long runs of horizontally pivoted ventilators. In general construction and design Tension operator is similar to Continuous operator. Power and transmission lines are the same, except that each power is equipped with a double stop so that all movement is



Fenestra Tension Operator Showing Power, Tension Line and Operator Arm

stopped and power cut off both when the vents are closed and when they are fully open.

Operating arms are adjustable, straight, steel channels rigidly attached to the tension line by malleable iron and steel swivel clamps. Arms attach to the vents by steel pivot hinges.

Power may be attached at either end of the run not closer to the end than 20'. Operator limited (single power) to 300'.

SCREW TYPE OPERATOR

Designed for use in high openings, such as power house bays, filled entirely with windows and structural mullions. May be used with ventilators pivoted 2" above center or 4" down from the top. Lies close to the windows, out of the way of cranes. May be concealed in the walls, if desired, at extra cost.

Two types of power are available: (a) Open bevel gears, manually operated by a hand wheel. Power to be assembled in an open cast iron case. (b) Electrical power with gears assembled and oil encased in a dust-proof gear box. Power to be connected either directly through a universal joint or by sprocket and chain drive.

Either power operates a $\frac{3}{4}$ " vertical, threaded steel shaft upward or downward. To this shaft are connected heavy, cast iron cross heads, which operate cast iron rocker arms, which in turn are connected to the transmission line. Transmission line is 1" wrought iron pipe with drive fitted steel plugs and rotates to operate pivoted lever arms (two to each vent), which connect with the ventilator jamb bars. Power may be located at either end of the run or at any intermediate point. Operator limited (single power) to 20 2-pane high vents pivoted 4" from top or 50 2-pane high vents pivoted 2" above center. One row of fixed lights at the sill of the window usually is required to permit clearance of power.



Screw Type Operator

RACK AND PINION OPERATOR

Designed for ventilators pivoted 4" from the top or with vents pivoted 2" above center. Three types of power are available: (a) Light power: 32 to 1 reduction. Cut steel worm equipped with ball thrust bearings, operating a cast iron worm gear assembled in a steel housing. (b) Heavy power: 45 to 1 reduction. Machine cut steel worm equipped with ball thrust



Rack and Pinion Operation of Pivoted Ventilators

bearings operating a semi-steel worm gear assembled and oil encased in a dust-proof gear box. (c) Electrical power: 71 to 1 reduction. Machine cut steel worm equipped with ball thrust bearings operating a semi-steel worm gear assembled and oil encased in a dust-proof gear box.

Power line is 1" wrought iron pipe to which pinions are rigidly attached. Operating arms are straight steel

racks attached to vents and clamped in mesh with the pinions.

Light and heavy powers may be operated (a) by chain and chain wheel or (b) by crank and miter gear (similar to worm and gear operators). Electrical power is operated by a cast iron sprocket wheel keyed to the worm shaft and motor driven through a chain drive. The electrical equipment is mounted directly beneath and joined to the power gear case forming one complete power unit.

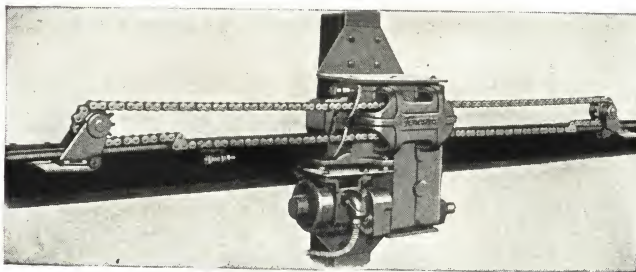
Power may be either vertical or inclined, located at either end of the run or at any intermediate point. Light and heavy operators in single runs limited to 80' and 12 horizontally pivoted vents on either side or 40' and 6 top pivoted vents on either side. Double runs limited to half that of single runs. Electrical powers in single runs limited to 300' for horizontally pivoted vents or 150' for top pivoted vents. In double runs, electrical powers are limited to 150' for horizontally pivoted vents and 75' for top pivoted vents.

SUPER-POWER OPERATOR

For exceptionally large industrial buildings where unusual operating service is desired on long runs of continuous top hung windows, we are prepared to supply the Fenestra super-power which, in connection with continuous operator transmission line and lever arms, will handle conveniently top hung continuous windows in runs up to 600'.

The utmost care has been used both in workmanship and materials to produce a device that combines smooth, even, efficient action with superlative strength and durability.

The power consists of a heavy, double, spur gear reduction of especially heat-treated alloy steel and a case-hardened steel worm engaging a heavy, special alloy,



The Fenestra Super-power

non-ferrous bronze worm gear. Shafts for all spur gears are of heat-treated alloy steel with generously proportioned bearings. The worm shaft has, in addition, combination radial and thrust bearings of ball bearing type. The entire mechanism is enclosed in an accurately machined oil-tight case.

The power is usually located in the center of the run, operating a transmission line on either side through a heavy, continuous, roller type, chain drive. The motor is direct connected to the power by means of spur gears.

Conditions demanding the use of this super equipment are unusual. We strongly recommend consultation with

Fenestra engineers who will be glad to make suggestions without obligation.

ELECTRICAL EQUIPMENT

The following specifications cover the electrical equipment for Fenestra operating devices:

All mechanical operators, electrically controlled, shall be provided by the operator manufacturer, with complete electrical equipment, as hereinafter specified. The operator manufacturer shall provide complete wiring diagrams.

Motors shall be of type best adapted to the power equipment, of high torque and ample horsepower.

(Note:—Motors operating on 220-volt or 440-volt, 60-cycle, 3-phase, alternating current are recommended. Direct current motors are not carried in stock, but if alternating current is not available a special motor for 230-volt, direct current, can be supplied.)

(Note:—Specify current furnished.)

Motors shall be connected to power by means of sprockets and chains, or direct connected through universal joints as best adapted to power requirements. Standard magnetic reversing switches shall be enclosed in steel boxes and so designed that the movement of the ventilator, either in opening or closing, may be stopped or started at any point by manipulation of push buttons.

Limit switches shall be positive in action and rigidly attached to the power to form an integral part of the power unit. All limit switches shall be enclosed, yet accessible for adjustment so as to positively limit the motion of the ventilator in either direction.

Push button stations "open," "close" and "stop" shall be of rugged construction to withstand hard usage. Buttons shall be recessed in cover so that they cannot be accidentally operated.

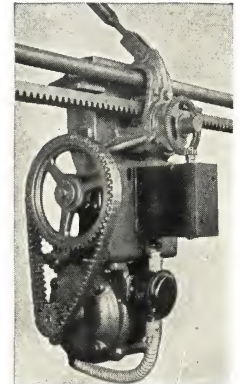
(Note:—The following provisions should be made in the Electrical Specifications:

The electrical contractor shall install magnetic reversing switches and push button stations and shall furnish and install safety type line switches. He shall also furnish all conduit, fittings and wire and do all wiring in accordance with the wiring diagram between the electrical equipment furnished by the window operator manufacturer and that furnished by himself.

All materials and workmanship shall meet the requirements of the National Electric Code and all Local and State Inspection Bureaus.

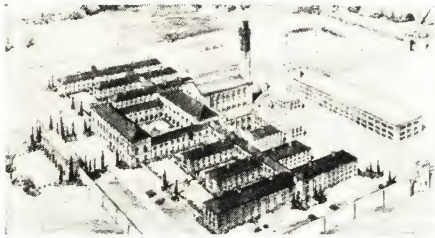
Conduit shall be galvanized or black enameled. Wire shall be rubber covered N. E. C. Exposed conduit shall be run in a systematic, sightly manner, parallel with structural features of the building and rigidly and neatly secured. Where walls are plastered, conduit shall be concealed.

The electrical contractor shall carry fire, workmen's compensation, and public liability insurance. He shall guarantee his work for a period of one year after completion. Defect in the work and material furnished by him, developing during the above named period, shall be promptly and satisfactorily made good at his expense.)



Continuous Power
Electrically Controlled

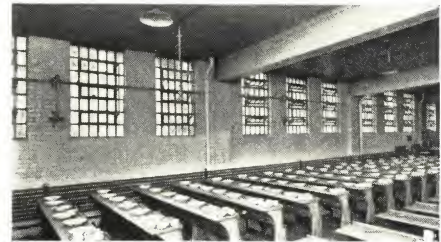
FENESTRA DETENTION WINDOWS



Federal Penitentiary,
Lewisburg, Pa.



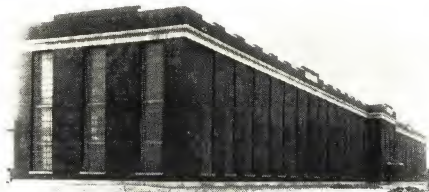
Boys' Vocational School,
Lansing, Mich.



Detroit House of Correction,
Detroit, Mich.



Michigan State Hospital,
Traverse City, Mich.



Erie County Penitentiary,
Wende, N. Y.



Michigan State Prison,
Jackson, Mich.

The term "Detention Windows" is used to designate collectively, what is really an extremely varied assortment of windows, all designed to function as windows should, and, at the same time provide a certain amount of restriction.

How much restriction is desired? That is the fundamental question to be carefully analyzed before any window suggestions can be offered, and the answer depends to a large extent on the character of the institution. Consider, for example, the following: (1) Homes for eccentric old people. (2) Reform schools for minors. (3) Hospitals for the mildly deranged. (4) Asylums for the violently insane. (5) Prisons for city, county, state and Federal criminals.

As the degree of detention varies, so also does the design

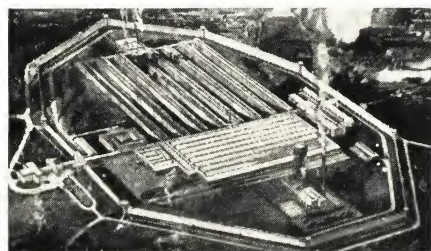
and construction of the windows to be recommended. Fenestra Detention types cover the entire range from casement and projected designs, with large ventilators slightly restricted as to opening up to heavy $1\frac{3}{4}$ " sections, 6"x9" glass lights, one-light high ventilators and the strength and rigidity of prison bars.

Combinations may include open-in and open-out ventilators; screened or unscreened; with or without grilles; fixed units in connection with movable wood sash; ventilators with limiting stops; ventilators with special keyed locks; ventilators with fixed units, or with prison bars outside.

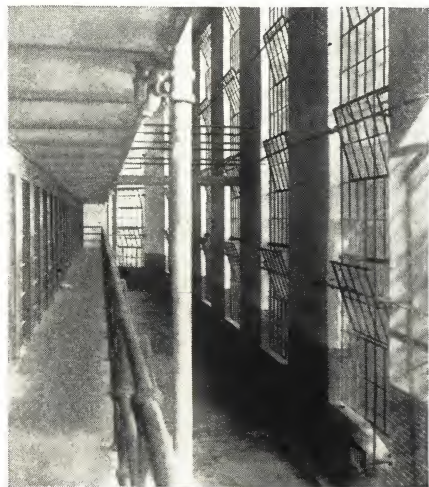
Fenestra Engineers will be glad to co-operate in designing the type of window suitable for any institution and any purpose.



State Hospital, Crownsville, Md.



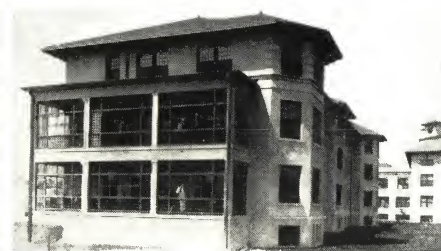
Eastern State Penitentiary,
Graterford, Pa.



Wisconsin State Prison,
Waupun, Wis.



Berks County Sanitarium, Berks Co., Pa.



Oregon State Asylum,
Pendleton, Ore.

AIRPLANE HANGAR DOORS

SPECIFICATIONS

(Note:—Practical limits are determined largely by shipping facilities, height of tunnels, width of bridges, etc.)

GENERAL

All doors shall be Fenestra Airplane Hangar Doors as manufactured by the Detroit Steel Products Company.

MATERIAL

(Note:—All framing to be included with the Miscellaneous Structural Steel or Ornamental Iron or under other specification divisions.)

Upper part of doors shall be provided with glass panels constructed of solid rolled steel frame sections and muntin bars of $1\frac{3}{8}$ " depth. Lower panels shall consist of solid 13-gauge steel plates.

(Note:—Doors of the same general design as those shown above can be furnished with structural rails and stiles.)

All door stiles and rails shall be made of ($2\frac{1}{2}$ "x $2\frac{1}{2}$ " (3 "x $3\frac{1}{2}$ " (4 "x $2\frac{1}{2}$ " steel tubing. Rails shall be solidly welded to stiles at all junctions. Weathering between doors on adjacent tracks shall consist of rubber strips, secured by continuous metal retainers to the stile of one door, making contact weathering against the stile of adjacent door. Weathering between doors on the same track shall be of steel.

CONSTRUCTION

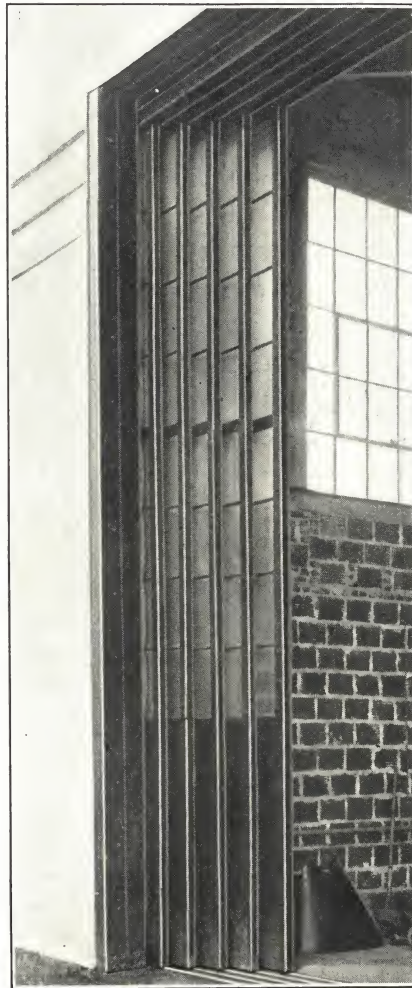
Frames of glass panels shall be mortise and tenon, air hammer riveted, and welded at all corners. Muntins shall be continuous from bottom to top and from side to side, so interlocked at intersections as to increase the rigidity and strength—joints at frames shall be mortise and tenon, air hammer riveted. Solid panels shall be secured to tube frame.

(Note:—Where glazing angles are specified all glass shall be secured with glazing angles mitered at corners. Angles shall be secured with machine screws tapped to frame, and with machine screws and nuts to muntins.)

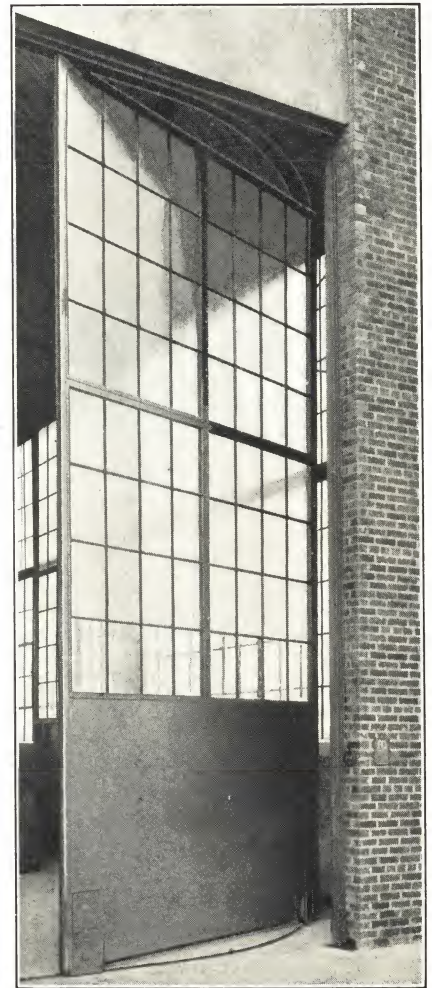
All doors shall rest on double flanged, malleable iron wheels so designed as to roll on steel tracks carrying the entire weight of the doors. Each wheel shall be mounted by housings and plates, and equipped with roller or swivel ball bearings and Alemite lubricated.

Bronze bushed malleable iron rollers shall be attached to the head rail of each door, to serve as guides and reduce friction, and minimize the transverse load on structural steel members.

(Note:—Hinged pilot doors supplied as specified.)



Fenestra "Straight Slide"
Hangar Doors



Fenestra "Round the Corner"
Hangar Doors

Unless otherwise specified a swing door, to fold back against the wall, will be furnished at each end of the door opening, to provide track clearance for curved track type doors.

ATTACHED HARDWARE

Suitable locking hardware, such as friction bolts, cremone bolts, etc., shall be supplied for each door.

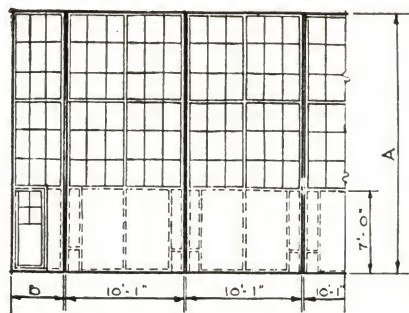
ERECTION

All doors shall be erected by the Fenestra Construction Company under a separate contract.

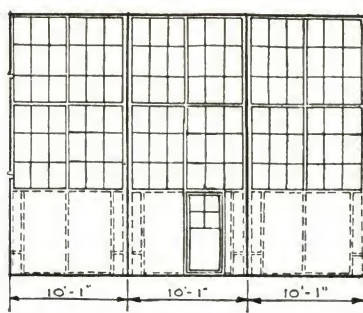
PAINTING—GLAZING

(Note:—Same as Painting and Glazing Specifications for Horizontally Pivoted Windows.)

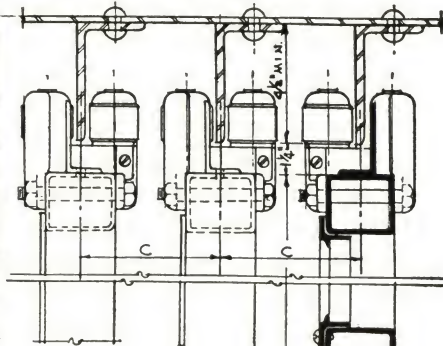
TYPES AND SIZES ~ DETAILS OF CONSTRUCTION



TYPICAL ROUND THE CORNER



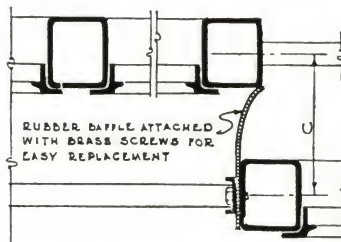
TYPICAL STRAIGHT SLIDE



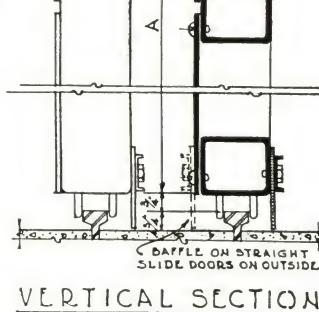
NOTE

FOR DIMENSION "B" - WIDTH OF END SWING DOORS - SEE DOOR OPENING TABLE AT LOWER RIGHT. PILOT DOORS WILL BE FURNISHED IN KICK PLATE OF ANY END SWING OR STRAIGHT SLIDE DOOR WHEN SPECIFIED ON ORDER.

TABLE OF STANDARD SIZES		
ALL ROLLING DOORS ARE 10'1" WIDE		
HEIGHT OF DOOR (DIM. "A")	SIZE OF TUBE	TRACK SPACING DIM. "C"
16'-0"	2 1/2" x 2 1/2"	5 1/4"
18'-0"	2 1/2" x 2 1/2"	5 1/4"
18'-0"	3" x 2 1/2"	6"
20'-0"	3" x 2 1/2"	6"
22'-0"	3" x 2 1/2"	6"
22'-0"	4" x 2 1/2"	7"
25'-0"	4" x 2 1/2"	7"
28'-0"	4" x 2 1/2"	7"



TYPICAL HORIZONTAL SECTION.

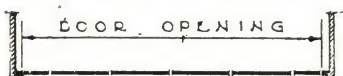


VERTICAL SECTION

TYPICAL DOOR OPENINGS



MULTIPLE TRACK SYSTEM

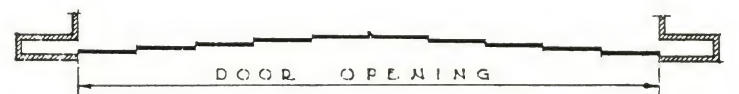


SINGLE TRACK SYSTEM

ROUND THE CORNER DOORS



OUTSIDE SLIDING - SHOWING TWO DOORS PER TRACK



INSIDE SLIDING - SHOWING ONE DOOR PER TRACK

PATENTS PENDING

DOOR OPENING	NO. OF 10'-1" ROLLING DOORS	NO. OF TRACKS	DIM. "B" - END SWING DOOR 2 REQ'D.
50'-0"	4	1	4'-8"
60'-0"	5	1	4'-8"
70'-0"	6	2	4'-8"
80'-0"	7	2	4'-8"
80'-0"	7	1	4'-6"
90'-0"	8	2	4'-8"
90'-0"	8	1	4'-6"
100'-0"	9	2	4'-8"
100'-0"	9	1	4'-6"
110'-0"	10	2	4'-6"
120'-0"	11	3	4'-6"
130'-0"	12	3	4'-6"
140'-0"	13	3	4'-6"
150'-0"	14	3	4'-6"
160'-0"	15	3	4'-6"

DOOR OPENING	NO. OF DOORS IN OPENING	NO. OF TRACKS	DOORS PER TRACK
50'-0"	5	3	1
60'-0"	6	3	1
70'-0"	7	4	1
80'-0"	8	2	2
80'-0"	8	4	1
90'-0"	9	3	2
90'-0"	9	5	1
100'-0"	10	3	2
100'-0"	10	5	1
110'-0"	11	3	2
120'-0"	12	3	2
130'-0"	13	4	2
140'-0"	14	4	2
150'-0"	15	4	2
160'-0"	16	4	2

Fenestra
August 1929

Airplane Hangar Doors
Types and Sizes

Plate No
Y-122

FENESTRA BYRNE DOORS



Fenestra Byrne Door in the Hangar of the Continental Airways, Inc., Chicago, Ill.

The Fenestra Byrne Door has the following advantages which will appeal at once to any one with a practical knowledge of hangar door construction or operation:

(1) It is built entirely in one piece which eliminates the time and effort needed to move sectional doors of either sliding or lifting types.

(2) It opens or closes, silently, in the shortest possible time and with minimum effort. Hand operation, 50 to 90 seconds; Electric, 18 to 30 seconds; Pull, about 15 pounds.

(3) It can be operated from one position which is accessible either from within or without and protected in case of fire.

(4) It does not occupy valuable ground space at the sides of the hangar.

(5) It does not occupy floor space nor does it blind or restrict windows in the sidewall, when open.

(6) It requires no floor tracks which fill up with dirt or snow.

(7) It operates in the severest winter weather; guides cannot clog or freeze.

(8) When open, it forms a canopy across the entire door opening, adding 6' to 10' to the roofed area and protected floor space.

(9) Its first movement in opening is a vertical lift of 8" which clears any ordinary snow or ice outside.

(10) When closed, it weathers with a flat contact at head, jambs and sill; unsurpassed as a storm protector and fuel saver.

(11) It requires only 8½" clearance above the top of the door opening.

(12) It can be installed in most hangars without changing the design in any way, and with practically no additional structural steel.

(13) The Fenestra Byrne principle has had over four years of development and satisfactory use.

Fenestra Byrne Doors are constructed from structural shapes, neatly fitted and solidly welded and can be designed up to 28' high and 150' wide. The upper 1' and lower 7' of the door are covered by 13-gauge kick plates, the intermediate section being filled with Fenestra fixed windows.

In opening, the door lifts vertically 8", then tilts as it rises until, when fully open, it is practically horizontal, half inside and half outside of the door opening.

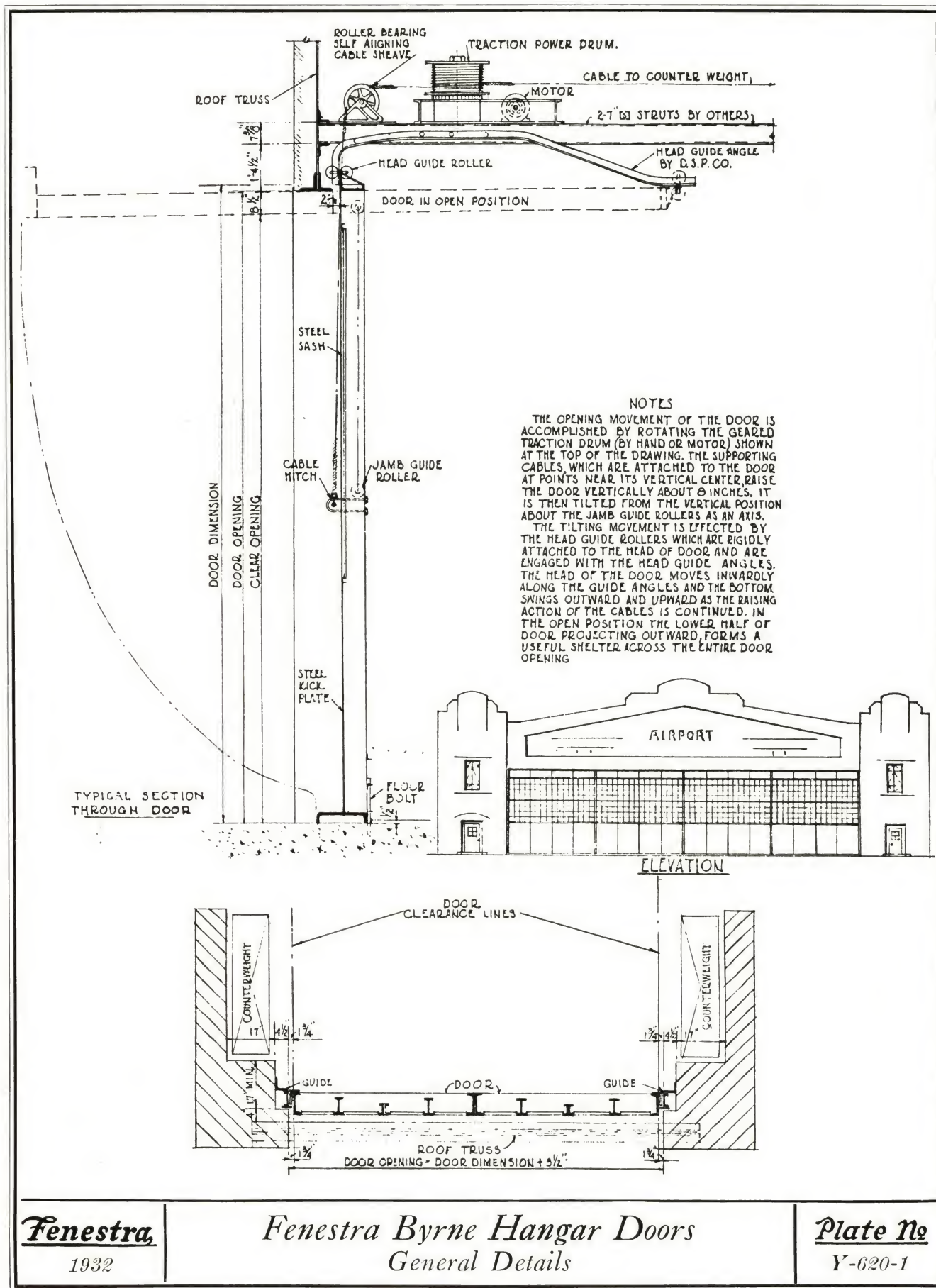
Operation is by means of heavy, high tensile alloy steel cables, spaced about 20' on centers. These cables, attached near the center of gravity, extend up the outside of the door and are carried over roller bearing sheaves around a central power drum with traction grooves and thence to conveniently located counterweights. Each cable has a liberal safety factor so that even if one or more cables were broken, those remaining would be ample for support.

The central power drum is rotated on a vertical axis by a worm and worm-gear power unit, either electrically or manually operated. Hand operation is by means of a heavy wheel and endless manila rope. Power operators are equipped with auxiliary hand operators and the change from power to hand operation or vice versa is instantaneous.

Solenoid or mechanical brakes and limit switches are provided to insure absolute safety and positive control.

When closed, the door weathers at the head with a combined sliding and pressure contact, flat, definite and positive against a flexible base attached to the building construction. At the jambs, a similar contact is made with solid steel weathering bars. At the sill, the door fits tight against the rabbeted concrete floor.

Floor bolts and positive anchors at the head are provided to lock the door against any wind pressure.

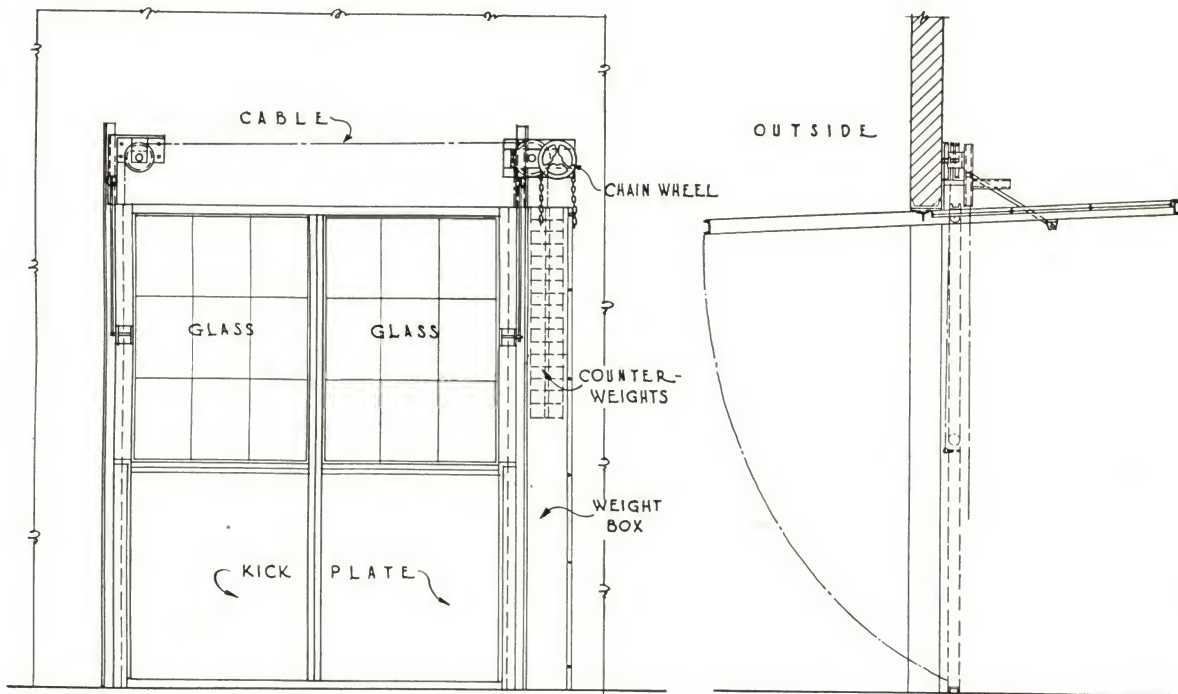
**Fenestra**

1932

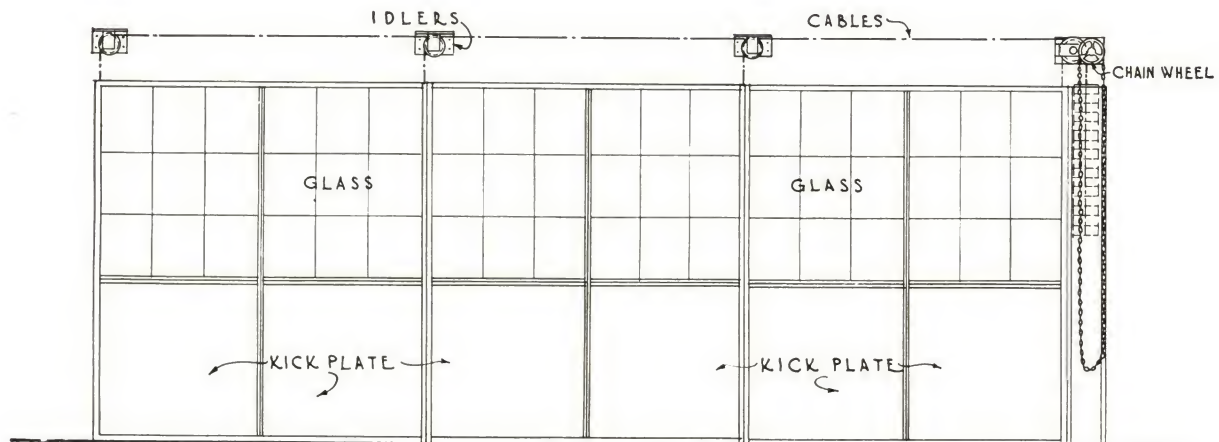
Fenestra Byrne Hangar Doors
General Details

Plate No

Y-620-1



FENESTRA BYRNE DOOR FOR SMALL OPENINGS
CAN BE FURNISHED EITHER WITH OR WITHOUT HAND CHAIN OPERATOR



FENESTRA BYRNE DOOR FOR WIDE OPENINGS
FOR WAREHOUSE DOORS UP TO 40'-0" IN WIDTH EQUIPPED WITH
MULTIPLE CABLE SYSTEM OF OPERATION ~

Fenestra

1932

Byrne Warehouse Doors
General Details

Plate No

Y-621-1

COMMERCIAL STEEL DOORS

SPECIFICATIONS

GENERAL

All doors shall be Fenestra Commercial Steel Doors, swinging or sliding as indicated, manufactured by the Detroit Steel Products Company. All swing doors shall be provided with pressed steel door frames.

MATERIAL

Stiles and rails shall be 14-gauge sheet steel, the meeting rail to be a special shaped section and all others to be formed and welded into $1\frac{5}{8}$ " x 4" tubes.

Muntins and astragals shall be solid rolled steel sections. Lower panels to be 18-gauge sheet steel.

CONSTRUCTION

Door corners shall be mitered and assembled over heavy reinforcement which shall extend at least $8\frac{1}{2}$ " in two directions from the corner and provide a base for attachment of hinges or clevises. Mitered joints shall be face welded around the entire miter and ground smooth.

Steel panels shall be spot welded to stiles and rails.

Muntins shall be interlocked at points of intersection and pivot ended and welded into the stiles or rails.

All double doors shall have astragals rigidly attached to the left-hand leaf.

DETACHED HARDWARE—SWING DOORS

Supply Half Surface, Loose Pin, Sherardized, Steel Hinges.

(Note:—Two hinges for each leaf are supplied for all doors up to 8' 0" high. For doors higher than 8' 0", three hinges are supplied.)

Japanned Steel Tee Latch and Keeper and Japanned Steel Cabin Hook shall be supplied as standard on all single and double swing doors.

(Note:—Bronze mortise cylinder locks, master-keyed if desired, may be had at extra cost.)

Japanned Wrought Steel Chain Bolt and Foot Bolt shall be supplied, one each on the inactive leaf of each double swing door.

DETACHED HARDWARE—SLIDING DOORS

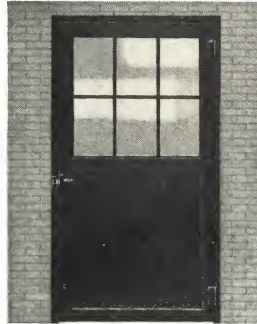
Pressed steel clevises shall be supplied for attachment at upper reinforced corners to accommodate trolley hangers.

Supply one Japanned Steel Safety Hasp for attachment to each active leaf with staple for inactive leaf or door frame.

(Note:—We do not supply padlocks.)

Supply two Japanned Steel Flush Pulls for attachment one on each side of each sliding door leaf.

Supply standard, deep channel tracks, supported on 2" centers by U-shaped track brackets of heavy gauge steel. Supply heavy duty, four wheel, roller bearing trolleys with adjustable trolley hangers for attachment to clevises.



Commercial Swing Door



Commercial Double Sliding Doors

Guides shall be solid rolled steel angles with flaring edges. Binders shall be formed bar steel. Center stops on double sliding doors shall be malleable iron castings.

DOOR FRAMES

(Note:—Frames for sliding doors are not furnished by D. S. P. Co.)

Door frames shall be 13-gauge sheet metal formed into specially designed $1\frac{1}{2}$ " x 4" channels with self-contained rebate.

All door frames shall extend 1" below the finished floor line for anchorage.

All door frames shall anchor to structural steel or shall be equipped with bar steel anchors, to extend into the masonry, approximately 18" apart.

ERECTION

(Note:—At reasonable cost, Fenestra Construction Company will erect doors and frames. If desired, so specify.)

PAINTING

All doors and frames shall be given one brush coat of red oxide paint at the factory.

(Note:—Include in the Painting Specifications that all doors and frames should be given at least one additional coat of paint after erection.)

(Note:—Where desired, Fenestra Construction Company will do field painting after erection, at slightly added cost. If desired, so specify including specifications for paint and its application.)

GLASS AND GLAZING

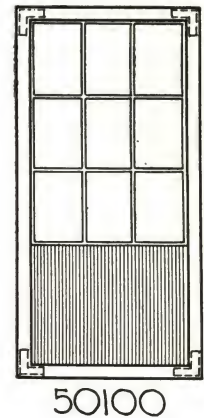
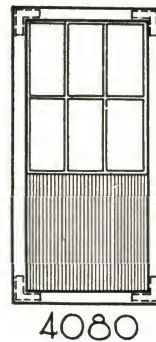
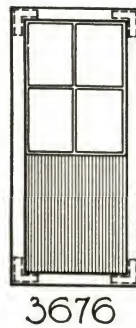
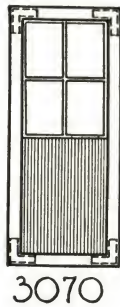
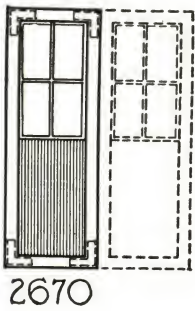
Glass shall be $\frac{1}{4}$ " rough wire, $\frac{1}{4}$ " factory ribbed, or $\frac{1}{8}$ " factory ribbed.

(Note:— $\frac{1}{4}$ " glass is recommended. Single or double strength glass should not be used. Glass is not furnished by D. S. P. Co.)

Putty shall be high grade steel window putty.

(Note:—Ordinary wood sash putty must not be used.)

All doors shall have glass set in a bed of putty and held in place by steel glazing angles mitered at the corners.

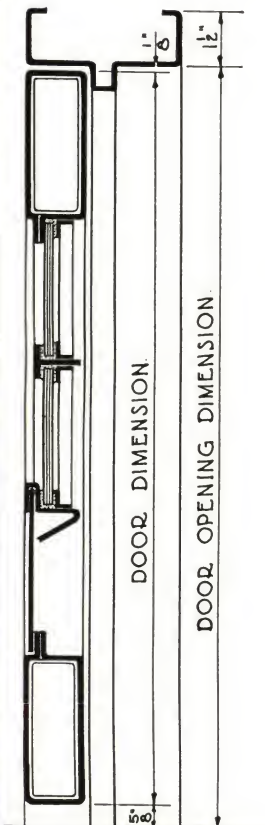


STOCK SIZES									
DOOR	SIZE OF DOOR		SWING OPENING		SLIDE OPENING		GLASS		
	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH	HEIGHT	SIZES		
S I N G L E D O O R									
2670	2'-5 $\frac{5}{8}$ "	6'-11 $\frac{1}{4}$ "	2'-6"	7'-0"	2'-3"	6'-10 $\frac{1}{2}$ "	10 $\frac{1}{2}$ "x16 $\frac{1}{2}$ "		
3070	2'-11 $\frac{5}{8}$ "	6'-11 $\frac{1}{4}$ "	3'-0"	7'-0"	2'-9"	6'-10 $\frac{1}{2}$ "	13 $\frac{1}{2}$ "x16 $\frac{1}{2}$ "		
3676	3'-5 $\frac{5}{8}$ "	7'-5 $\frac{1}{4}$ "	3'-6"	7'-6"	3'-3"	7'-4 $\frac{1}{2}$ "	16 $\frac{1}{2}$ "x19 $\frac{1}{2}$ "		
4080	3'-11 $\frac{5}{8}$ "	7'-11 $\frac{1}{4}$ "	4'-0"	8'-0"	3'-9"	7'-10 $\frac{1}{2}$ "	12 $\frac{1}{8}$ "x22 $\frac{1}{2}$ "		
50100	4'-11 $\frac{5}{8}$ "	9'-11 $\frac{1}{4}$ "	5'-0"	10'-0"	4'-9"	9'-10 $\frac{1}{2}$ "	16 $\frac{1}{8}$ "x22 $\frac{1}{8}$ "		
D O U B L E D O O R									
5070	2'-2'-5 $\frac{5}{8}$ "	6'-11 $\frac{1}{4}$ "	5'-0"	7'-0"	4'-9"	6'-10 $\frac{1}{2}$ "	10 $\frac{1}{2}$ "x16 $\frac{1}{2}$ "		
6070	2'-2'-11 $\frac{5}{8}$ "	6'-11 $\frac{1}{4}$ "	6'-0"	7'-0"	5'-9"	6'-10 $\frac{1}{2}$ "	13 $\frac{1}{2}$ "x16 $\frac{1}{2}$ "		
7076	2'-3'-5 $\frac{5}{8}$ "	7'-5 $\frac{1}{4}$ "	7'-0"	7'-6"	6'-9"	7'-4 $\frac{1}{2}$ "	16 $\frac{1}{2}$ "x19 $\frac{1}{2}$ "		
8080	2'-3'-11 $\frac{5}{8}$ "	7'-11 $\frac{1}{4}$ "	8'-0"	8'-0"	7'-9"	7'-10 $\frac{1}{2}$ "	12 $\frac{1}{8}$ "x22 $\frac{1}{2}$ "		
100100	2'-4'-11 $\frac{5}{8}$ "	9'-11 $\frac{1}{4}$ "	10'-0"	10'-0"	9'-9"	9'-10 $\frac{1}{2}$ "	16 $\frac{1}{8}$ "x22 $\frac{1}{8}$ "		

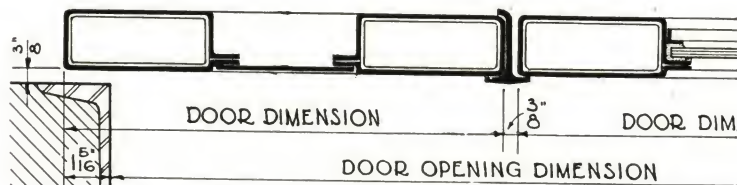
NOTES

ALL TYPES SHOWN ABOVE ARE
FURN. EITHER SINGLE OR DOUBLE,
SWING OR SLIDING DOORS ~
ALL DOORS ARE SHIPPED WITH

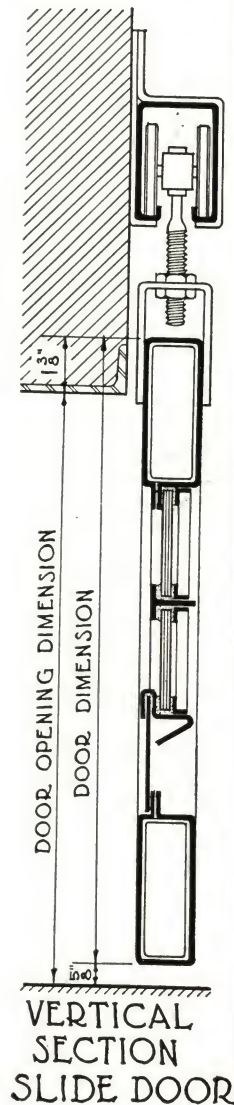
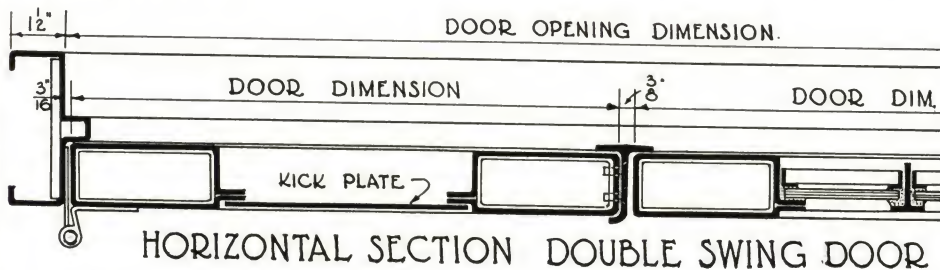
ALL HARDWARE DETACHED EXCEPT
LOCK (ON SWING DOOR) IS ATTACHED.
FRAMES (FOR SWING DOORS) SHIPPED
KNOCKED DOWN FOR ASSEMBLY IN FIELD.



VERTICAL SECT.
SWING DOOR



HORIZONTAL SECTION THRU
DOUBLE SLIDING DOOR



Fenestra

1932

Commercial Steel Doors
Swinging and Sliding Types and Details

Plate No

Y-505

FENESTRA INDUSTRIAL DOORS

Fenestra Industrial Doors are designed in types which swing, slide, fold, roll, lift or pivot. They may be operated either manually or electrically.

Doors designed especially for airplane hangars are shown on preceding pages. Industrial and commercial doors shown here are intended for use in warehouses, mills, garages, roundhouses, car shops, powerhouses, piers, freight depots, fire stations, factories, grain elevators, police stations and the utility departments of apartments and office buildings.

Fenestra Engineers are equipped to solve unusual door problems. Where openings of unusual size are encountered or peculiar methods of operation are necessary, Fenestra

Engineers will be glad to make suggestions and layouts without cost or obligation.

Since door frames, in all cases, should be installed when the building is erected to insure proper anchorage, while the doors themselves should be installed after the building is completed, we strongly recommend that door frames be included in the Structural Steel or Ornamental Iron Specifications, including slotted sliding door thresholds and track supports where required. Frames should be made to the exact dimensions given by the door manufacturer and erected plumb and true.

Where particularly desired, 4" channel frames for swing doors only, will be furnished with the doors at added cost.

SWINGING AND SLIDING DOORS

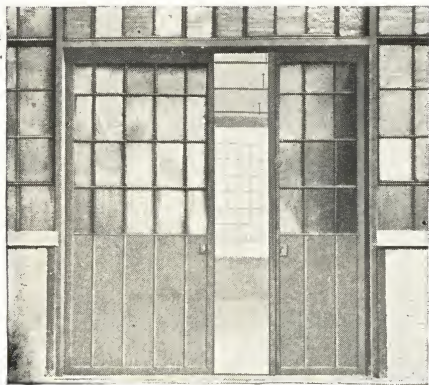
Fenestra Swing and Slide Doors are manufactured of pressed tube or tubular steel in single and double units.



Single Swing Door



Double Swing Doors



Double Sliding Doors

Closures, guides and meeting rail astragals are heavy steel plates. Tubular stiles and rails are mitered and welded at corners. Stiles are reinforced at the butts by heavy steel plates.

Panel frames are assembled in a manner similar to fixed industrial windows.

Glass is set in putty and secured by angle clips attached

to the frames by machine screws. Where necessary, stiles are tapped to receive hardware which is applied at time of erection.

Swinging tubular doors are equipped with 6" x 4 1/2" butts; channel trim doors with 4 1/2" x 4 1/2" butts. Both types have non-rising, loose butt pins.

All swinging single doors are equipped with standard, bronze faced, mortise cylinder locks, or japanned iron tee latches and strikes. Both single and double swinging doors are equipped with malleable iron or bronze handles and bronze faced cylinders and escutcheons. Inactive leaves of double swinging doors have standard top and bottom steel shot bolts, top bolt chain operated.

Sliding doors are equipped with combination flush and projecting iron handles, one on each door, solidly riveted to the panels; also hinged hasps and staples. They hang from standard steel tracks on adjustable roller bearing trucks and track brackets.

Special hardware, such as master keyed locks, standard fire exit panic bolts, door checks, etc., may be had at extra cost, if specified in advance.

FENESTRA BI-FOLD DOORS

Furnished in pressed tube, structural steel or tubular steel construction. Upper leaf fitted with steel windows or solid steel plates. Lower leaf, steel plate only. Furnished with hand chain operators or doors smaller than 12' x 10' may be operated by direct hand lift.



Bi-fold Door



Vertical Lift Door

FENESTRA VERTICAL LIFT DOORS

Furnished in pressed tube, structural steel or tubular steel. Conserve floor area or platform space. Counter-balanced — easily operated. Double leaf door requires headroom equal to half door height plus 1' 8". Furnished with hand chain or electric operator, or smaller sizes may be operated by direct hand lift. May be installed in any building where headroom permits.

FENESTRA PIER DOORS

Designed for heavy duty in piers and railroad terminals. Divided horizontally into three sections, the top two hinged together and to the top of the door opening. The bottom section (about half the door height) slides vertically in guides until its lower part engages the middle section. The nested sections then swing inward and upward to full door opening. When open, door is entirely within the building. Supplied in structural channel stiles and rails or tubular steel rails. Hand or power operation. Upper sections may be fitted with windows.



Pier Door

FENESTRA ACCORDION DOORS



Roundhouse Doors

Fenestra Accordion Doors are suitable for roundhouses and buildings that require extra large door openings. Hinges are heavy steel forgings accurately machined and fitted with large steel pins. Pilot doors can be installed where desired, equipped with cylinder locks. Main doors are fitted only with hasp and staple.



Accordion Doors

FIRE STATION AND GARAGE DOORS

For fire stations, public garages, bus terminals and motor repair shops, Fenestra Doors, either double swinging or accordion type, supply a wide, high opening with ample clearance for cars or trucks. Either type may be arranged to open in or out, manually operated or electrically connected to a remote control station. Of tubular construction and heavily reinforced, these doors are built for heavy and constant usage. When equipped with especially designed, quick-acting operator mechanism, they are peculiarly adapted to fire stations and police stations. Doors of similar design are recommended for electric railway car barns.



Garage Doors



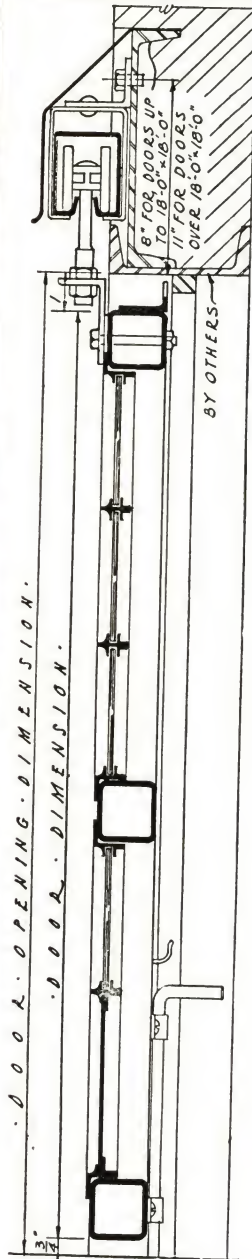
In a Car Barn

FENESTRA DOOR HARDWARE

Two standard types of hardware are regularly furnished with Fenestra Industrial Doors.

Our Series 100 Hardware with steel shroud plates and cast sheaves, fitted throughout with roller and ball bearings has been especially developed for high speed operation. Our Series 500 Heavy Duty Hardware is furnished with larger sizes of Fenestra Doors. Hand chain operator consists of chain pocket wheels and heavy duty spur gear drive mounted on anti-friction bearings and enclosed in an oil-tight case. Hand chain, chain wheel and guard are included.

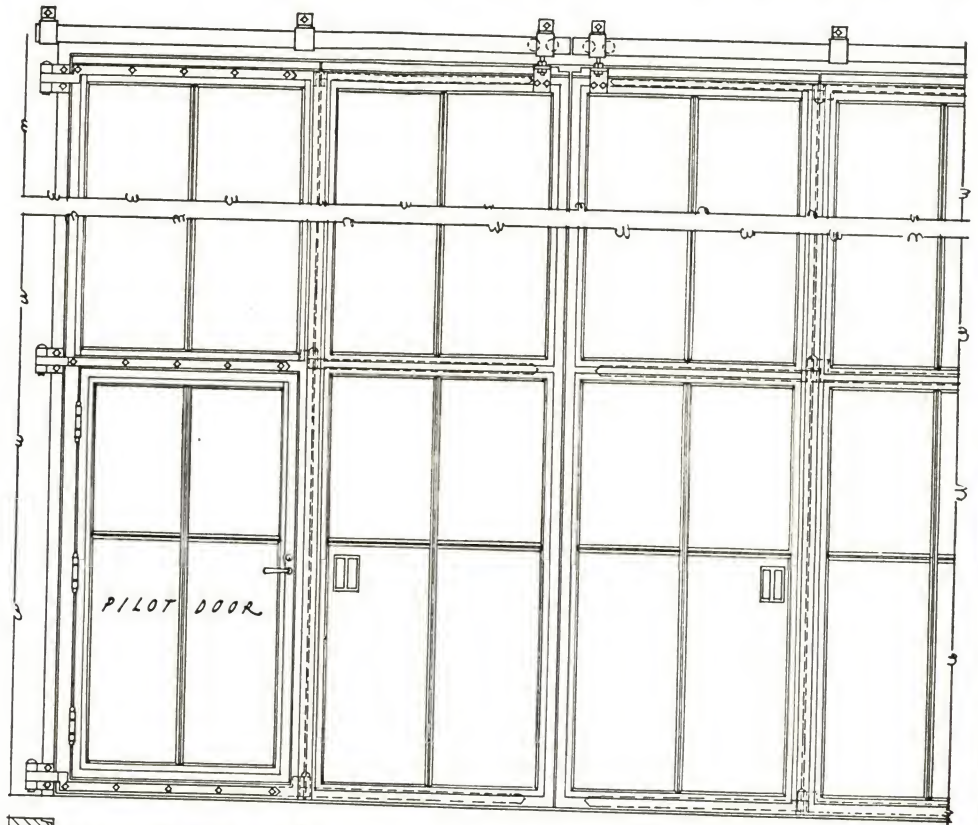
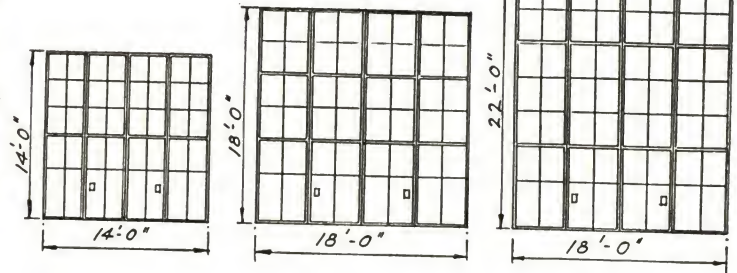
FLASHING BY OTHERS



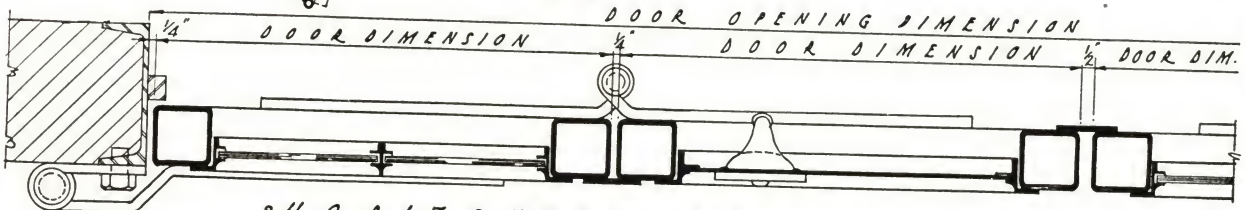
VERTICAL SECTION

NOTE - THESE DOORS ARE LIMITED TO 18'-0" IN WIDTH AND 22'-0" IN HEIGHT. GLAZING ANGLES ARE SUPPLIED BUT DOORS ARE FURNISHED UNGLAZED. THEY ARE EQUIPPED WITH NECESSARY HARDWARE INCLUDING TRACK WITH HANGERS AND TROLLEY, DOOR PULLS, CASE BOLTS AND HINGES. PILOT DOORS MAY BE INSERTED IN ANY UNIT IF DESIRED.

STANDARD TYPES.



PLAN AND ELEVATION



HORIZONTAL SECTION

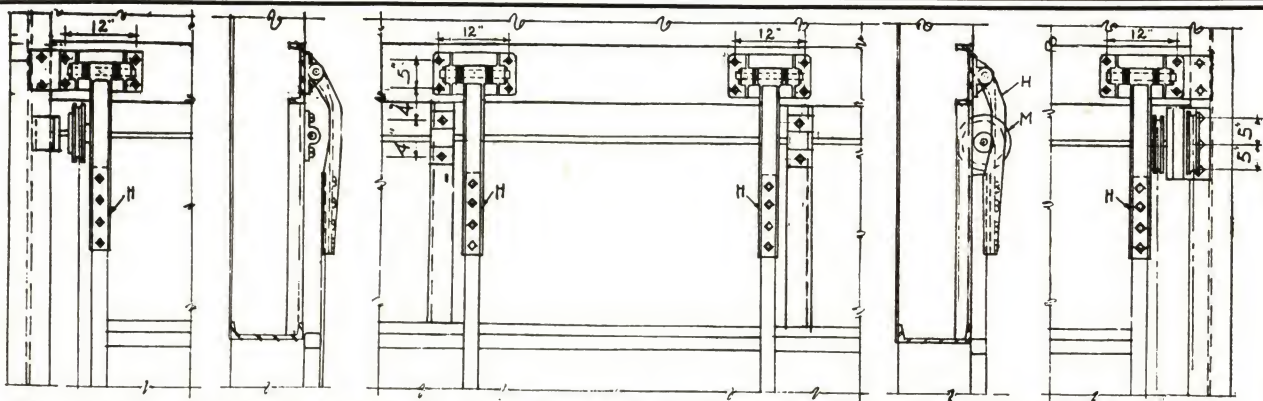
SCALE: $1\frac{1}{2}" = 1'-0"$ **Fenestra**

1931

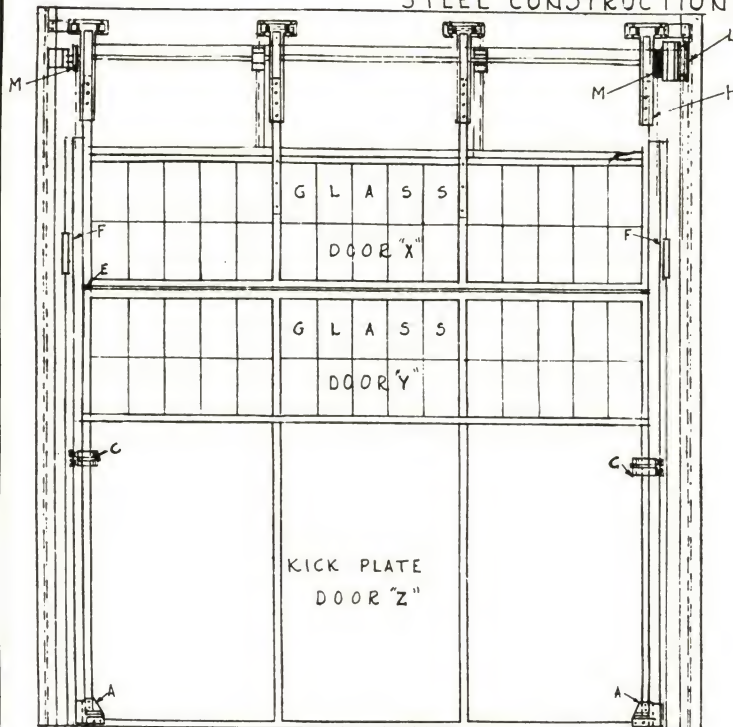
Fenestra Accordion Doors
Elevations and Details

Plate No

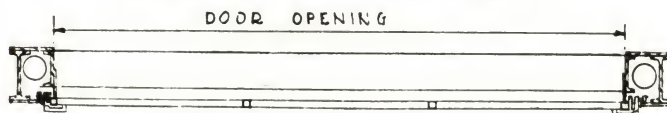
Y-301



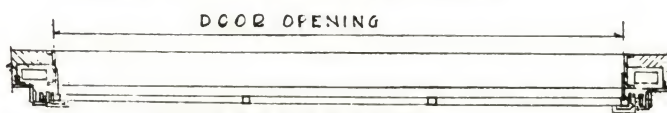
ENLARGED INTERIOR VIEW OF HEAD OF DOOR SHOWING HINGES AND OPERATOR MECHANISM
STEEL CONSTRUCTION BUILDING



INSIDE ELEVATION OF PIER DOOR
STEEL CONSTRUCTION BUILDING

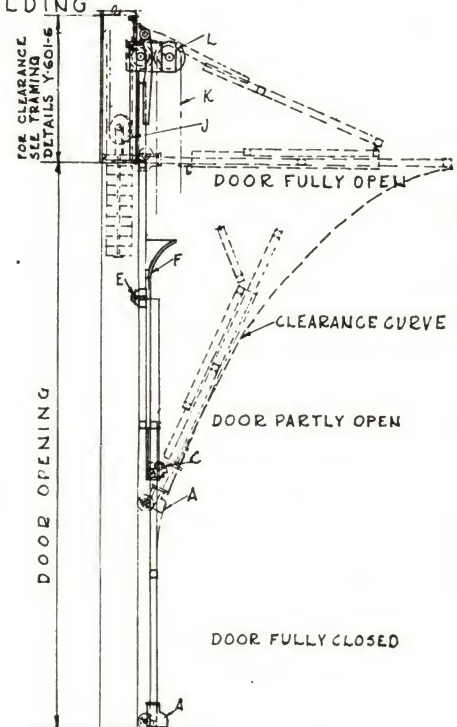


PLAN OF PIER DOOR
STEEL CONSTRUCTION BUILDING

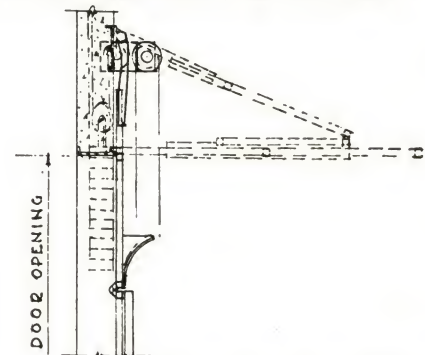


PLAN OF PIER DOOR
MASONRY CONSTRUCTION BUILDING

METHOD TO DETERMINE THE HEIGHT OF DOOR
SECTIONS X, Y AND Z. (H) = DOOR OPENING IN HEIGHT
(X) = $\frac{H}{4} - 6"$, (Y) = $\frac{H}{4} - 6"$ AND (Z) = $\frac{H}{2} + 1' - 2\frac{3}{4}"$



SECTION THRU PIER DOOR
STEEL CONSTRUCTION BUILDING



SECTION THRU HEAD OF PIER DOOR
MASONRY CONSTRUCTION BUILDING

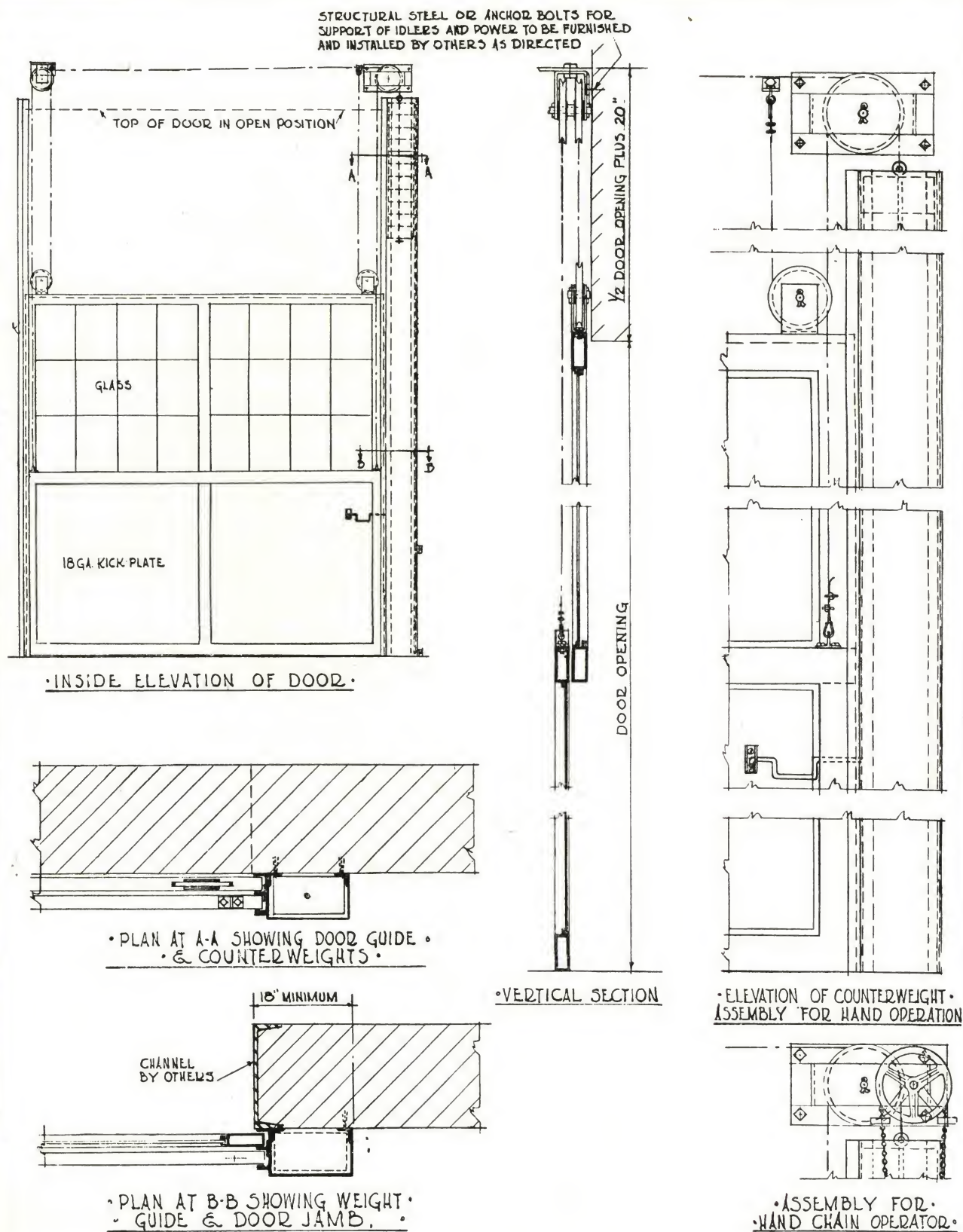
Fenestra

1932

*Fenestra Pier Doors
General Details*

Plate No

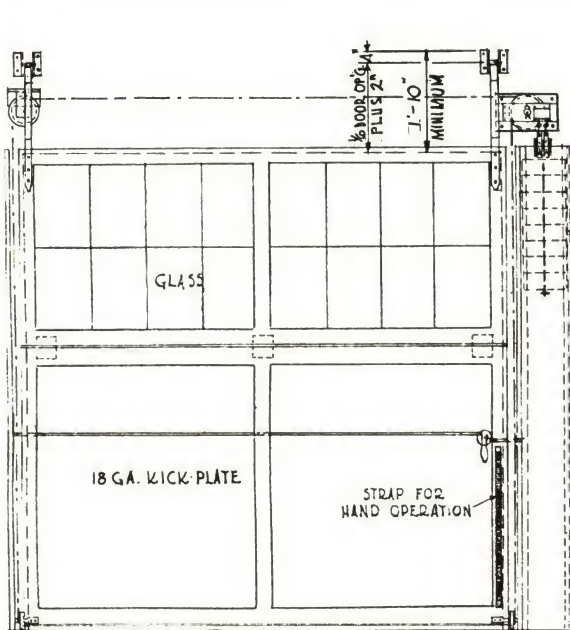
Y-601-1



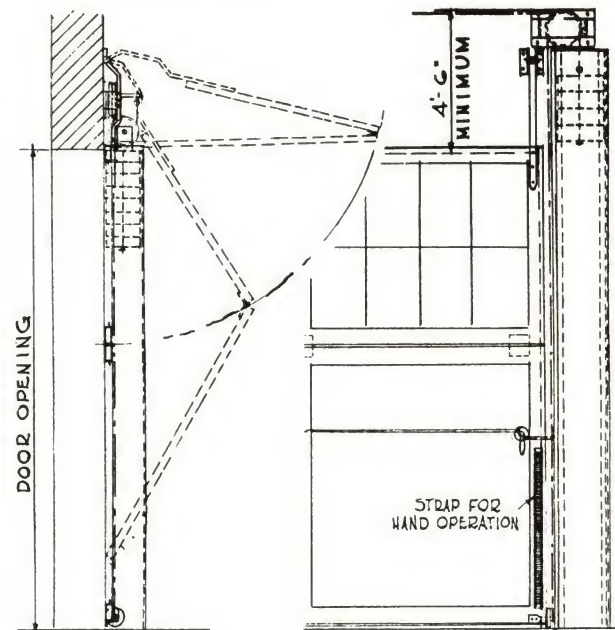
Fenestra
1932

Fenestra Vertical Lift Doors
General Details

Plate No
Y-602-6



• INSIDE ELEVATION OF DOOR •
• WHEN HEADROOM IS LIMITED •



• VERTICAL SECTION •
• THRU DOOR •

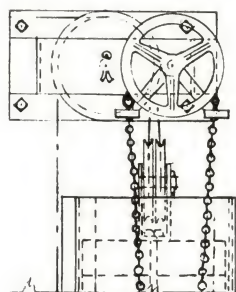
• PART ELEVATION ~
• WHEN HEADROOM PERMITS •

• NOTES •

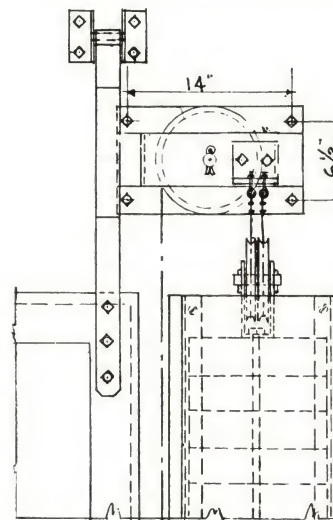
STRUCTURAL STEEL OR ANCHOR BOLTS FOR SUPPORT OF IDLERS AND POWER TO BE FURNISHED AND INSTALLED BY OTHERS AS DIRECTED

FOR ELEVATIONS & SIZES OF TYPES SEE PL. NO. Y-604-T5.

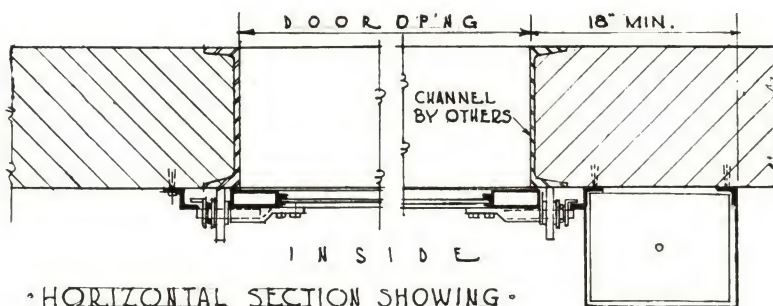
FOR DETAILS OF STRUCTURAL & TUBULAR BIFOLD DOORS SEE PLATE NO. Y-604-22.



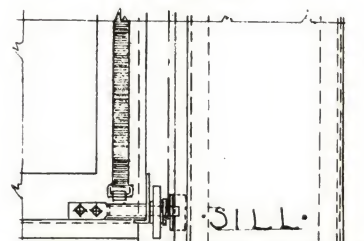
• ASSEMBLY FOR •
• HAND CHAIN OPERATOR •



• HEAD •



• HORIZONTAL SECTION SHOWING •
• WEIGHT BOX & DETAIL AT JAMBS •



• ELEVATION OF COUNTERWEIGHT •
• ASSEMBLY FOR HAND OPERATION •

Fenestra

1932

Bi-Fold (Jack Knife) Doors

General Details

Plate No

Y-604-21

Fenestra

BLUE BOOK OF
STEEL WINDOWS

